A DISSERTATION ON

" BREAST MILK DONATION : ACCEPTANCE AND KNOWLEDGE OF DONORS AND RECIPIENTS"

THE TAMIL NADU DR. MGR. MEDICAL UNIVERSITY,

CHENNAI–600032. TAMILNADU.

In partial fulfillment of the regulations

For the award of the degree of

M.D. DEGREE BRANCH-VII

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GOVERNMENT MOHAN KUMARAMANGALAM

MEDICAL COLLEGE, SALEM, TAMILNADU.

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I hereby declare that this dissertation titled **"BREAST MILK DONATION : ACCEPTANCE AND KNOWLEDGE OF DONORS AND RECIPIENTS"**is a bonafide and genuine research work carried out by me under the guidance of ***Dr. P. SAMPATHKUMAR,MD, DCH.,*** Professor, Department of Paediatrics, Government Mohan Kumaramangalam Medical College Hospital, Salem, Tamilnadu, India.

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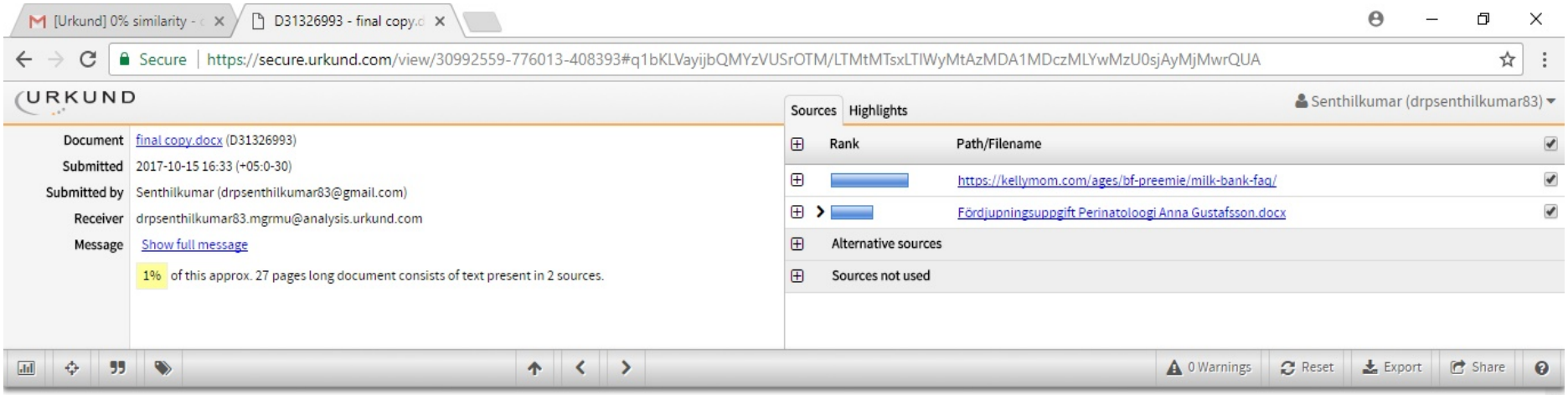

INTRODUCTION

Every infant deserves the best possible start in their life in terms of nutrition by breastfeeding or receiving donated human milk. Human breast milk is the most healthiest form of milk for babies. It has been proved that breast milk and donor human milk is the best form nutrition of choice for the most fragile and vulnerable infants in the Neonatal Intensive Care Unit. Breast milk is very important for the infant's growth and well-being that mothers absence should not deprive the infant from its benefits. Some infants cannot ingest formulas without undue stress, pain and gastric upset from exposure to formula feeds while some mothers are desperately trying to breastfeed their babies with limited success due to physical ailments, surgery or chronic illnesses. To make breast milk available to all babies, there is the need to embark on human milk banking. A human milk bank is a service which is involved in collecting, screening, processing human milk donated by nursing mothers who are not biologically related to the recipient infant. Donor milk bank is involved in the recruitment of appropriately screened donors and the collection, screening, storage, processing and distribution of their donated breastmilk. International Statement The World Health Organization (WHO) recommends that for donated milk is the next preferred form of milk for infants who cannot be breastfed.In donor milk, micronutrients and anti-infective factors are lost during pasteurization and decomposition over time. Hence, human donor milk is not exactly equal to fresh mother milk. Even then, sufficient bioactivity and immunological properties persist to guarantee that donated breast milk is superior to formula feeds. The first crucial step prior to the introducing a new health intervention is to determine the acceptability of such an intervention within recipient community. Since breast milk is one of the most sensitive bodily fluid, in locales of high HIV prevalance, infant feeding choices are often stigmatized because of their associations with HIV. This leads to high infant mortality rate in low birth weight babies. However, human donor milk is donated by mother in these communites with high HIV prevalance. Donor Milk Bank The first human milk bank was

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Ethical Committee Meeting held on 23.12.2015 at 11.00 A.M in the Seminar Hall, IInd Floor, Medicine Block, Govt. Mohan Kumaramangalam Medical College Hospital, Salem 01.

Name of the Presenter with Address	Title	Name of the Guide and Address	Whether it is Approved or not.
Dr. P. Senthil Kumar, I Year, Post Graduate Student of MD (Paediatrics), GMKMC, Salem-30.	"Human breast milk Donation and Acceptance and knowledge of Donors & Recepients".	Dr. P. Sampath Kumar, MD., DCH., Associate Professor of Paediatrics, GMKMC, Salem.	Approved

The Ethical Committee examined the studies in detail and is pleased to accord Ethical Committee approval for the above Post Graduate student of this College to carry out the studies with the following conditions.

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2. He should inform the institution Ethical Committee in case of any change of study procedure site and investigation or guide.
3. He should not deviate from the area of the work for which applied for Ethical clearance. He should inform the IEC immediately, in case of any adverse events or serious adverse reactions.
4. He should abide to the rules and regulations of the Institution.
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To
The Individual.

CONTENTS

LIST OF ABBREVATIONS

ABM	-	Academy of breast feeding medicine
ESPHGAN	-	European Society for Paediatri Gastroenterology Hepatology and Nutrition
AAP	-	American Academy of Paediatrics
SOP	-	Standard operating Procedure
GALT	-	Gut Associated Lymphoid Tissue
BALT	-	Bronchus Associated Lymphoid Tissue
LCPUFAS	-	Long Chain Poly Unsaturated Fatty Acids
EPA	-	Eicosa Pentaenoic Acid
PUFA	-	Poly Unsaturated Fatty Acids
LL	-	Lipoprotein Lipase
NGF	-	Nerve Growth Factor
TSH	-	Thyroid Stimulating Hormone
GHRF	-	Growth Hormone Releasing Factor
PDHM	-	Pasteurized donor human milk

ABSTRACT

The importance of breast milk for infants growth, development and overall health is widely recognized. In situations where women are not able to provide their infants with sufficient amounts of their own breast milk, donor breast milk, and the motivations and experiences of donors, there is limited research addressing the attitudes and experiences of the women and families whose infants receive this milk. This study therefore examined attitudes towards donated breast milk among mothers, families and healthcare providers of potential recipients infants.

To enhance the availability and use of human breast milk for hospitalized babies whose mothers may not have enough milk, there is the need to embark on human milk banking. Human milk banks paly an essential role by providing human milk to infants who would otherwise not be able to receive human milk. The largest group of recipients is premature infants who derive very substantial benefits from it. Milk bank collect screen, store, process and distribute human milk.

INTRODUCTION

Every infant deserves the best possible start in their life in terms of nutrition by breastfeeding or receiving donated human milk. Human breast milk is the most healthiest form of milk for babies. It has been proved that breast milk and donor human milk is the best form nutrition of choice for the most fragile and vulnerable infants in the Neonatal Intensive Care Unit.

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International Statement

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Donor Milk Bank

The first human milk bank was founded in 1909 in Vienna, Austria. Before human milk bank came into picture, Wet nursing was widely practiced. Owing to the unhealthy life styles of the wet nurses and the various infections transmitted through milk, human milk bank was found.

The first milk bank opened in the United States was in the Boston Floating Hospital and many others followed all over the world. asias first milk bank was set up at the lokmanya tilak municipal general hospital in Mumbai in 1989. In the 1960s, efforts in human milk banking faded started losing popularity due to the development of high-quality infant formulas. The added financial burden drove some milk banks out of business. Appropriate screening of donating mothers and standards of procedure have reversed that trend since the early 2000s

Milk banking activity varies greatly across the world due to a diversity in religious and cultural factors, economy and fund. Globally, there is an increase of interest in milk banking all over the world. Currently there is a move to open many milk banks in India and other Asian countries such as Vietnam, China, and Japan. The increase of interest goes with the recommendations of large pediatric societies, such as ABM, ESPHGAN, and AAP, to promote human milk feeding in premature infants. Breastfeeding is the first choice for an infant as per recommendations. The next best alternative is the human donor milk.

REVIEW OF LITERATURE

The related literatures are presented in the following subheadings.

1. Literature related to knowledge regarding human milk banking.
2. Literature related to acceptance regarding human milk banking.
3. Literature related to importance regarding human milk banking.

Literature related to knowledge regarding human milk banking.

A descriptive study was conducted to assess the characteristics of donation behavior and the role of beliefs and feelings for donation of breast milk across the two breast-milk banks. Data was collected from 100 women, with different levels of schooling through interviews carried out at hospitals. The study concluded that, the most frequently reported reasons for donating breast milk were altruism and excess milk production.

Literature related to acceptance regarding human milk banking.

A study was conducted to assess the attitude of donor mothers, sharing of breastfeeding or expressed breast milk. The objective of this study was to discover the mother's experiences of sharing breastfeeding or human milk. The study report shows every mother's desire is to provide human milk to their babies exclusively during their absence and illness.

Another study involved collection of data from structured pretested questionnaire.100 breast feeding mothers were chosen. The objective was to assess their attitude regarding milk banks and offering stored milk to the babies.

Yet another study was conducted to assess the attitudes towards donated breast milk among families and healthcare providers of potential recipient infants apart from mother. Although breast milk is important to child health, donor milk has its own risks which include concerns about undermining of breast milk because of concerns about transmission of HIV as well as marketing and promotion of formula milks. In addition there were concerns about the safety of donor breast milk and discomfort about using another mother's milk. Participants believed that education on the importance of breast milk and transparency on the processes involved in sourcing and preparing donor milk would improve the acceptability.

Literature related to importance regarding human milk banking.

The nutritional content of donor milk

There is no standardization of the macronutrient and mineral content of the donor milk. Some trials showed significant variation in macronutrient content in donor milk mainly due to natural biologic variability.

Nutritional components like Carbohydrates, fats, fat-soluble vitamins and salts are unaffected or only minimally reduced whereas thiirteen per cent of the protein content is denatured mainly due to the effect of heat during pasteurization.

Various components of human milk after freezing and pasteurisation

Nutrition Label*	Organic, raw whole milk, unhomogenized (A)	Organic, pasteurized whole milk, unhomogenized (B)	Conventional, pasteurized whole milk, homogenized (C)
Calories (1 cup)	150	150	150
Fat	12%	12%	12%
Saturated fat	25%	25%	25%
Trans fat	0	0	0
Cholesterol	10%	11%	12%
Sodium	4%	5%	5%
Total carbohydrates	4%	4%	4%
Fiber	0	0	0
Sugar	12 grams	11 grams	11 grams
Protein	8 grams	8 grams	8 grams
Vitamin A	6%	6%	6%
Vitamin C	0	4%	2%
Calcium	30%	30%	30%
Iron	6%	0	0
Vitamin D	Not listed	Not listed	25%**

*percent daily values based on 2,000 calorie diet.
**vitamin D added (fortified)

HYPOTHESIS AND OBJECTIVES

H_1: There will be significant association between knowledge score of lactating mothers regarding human milk banking.

H_2: There will be significant association between the lactating mothers regarding human milk banking.

OBJECTIVES OF THE STUDY

1. To assess knowledge regarding human milk banking among lactating mothers at GMKMCH, Salem.
2. To assess attitude regarding human milk banking among lactating mothers at GMKMCH, Salem.
3. To determine the association on knowledge score with selected demographic variables.
4. To determine the association on attitude score with selected demographic variables.
5. To find the co-relation between knowledge and attitude regarding human milk banking among lactating mothers at GMKMCH, Salem.

OPERATIONAL DEFINTIONS

- **Assess:** It refers to appraise value or evaluate or judge the quality of something.
- **Knowledge:** It refers to level of understanding or familiarity of lactating mothers regarding human milk banking.
- **Attitude:** It refers to opinion or view of lactating mothers regarding human milk banking.
- **Human milk banking:** It refers to collection, storage and processing of donated human milk.
- **Lactating Mothers:** It refers to mother who breast feeds her baby.
- **Information booklet :**It refers to carefully prepared concise and comprehensive information material regarding human milk banking.

SUBJECTS AND METHODS

This descriptive and cross-sectional study involved mothers of apparently healthy babies who were brought to the Well Baby/Immunization Clinic of the Government Mohan Kumaramangalam Medical College, Salem. A structured researcher-administered questionnaire was used to assess their biodata, and as potential donors, their awareness and perception of human milk banking to inform decision on such activity. Ethical approval was obtained from the Ethics Committee of GMKMCH, Salem and informed consent was obtained from each participant.

The results obtained were cross tabulated as frequency and contingency tables. Means, standard deviations and ranges were used as appropriate to describe continuous variables while categorical data were analyzed using Chi square and Fisher's exact tests. For all statistical tests, $p<0.05$ was considered to be significant.

INTERVIEW TECHNIQUES

1) Structured interviews (questions about age , schooling, marital status, occupation, family income, prenatal care, number of prenatal appointments, number of pregnancies)

2) Semi-structured (open-ended and closed questions about the reasons for donating, prior donations, period of donation in weeks/months, measures to materialize the donation decision, perception of experience).

INCLUSION CRITERIA

Lactating mothers

- ATTENDING WELL BABY CLINIC mother
- Baby in NICU mother
- be in the process of lactation
- Motivational mother
- Good healthy mother
- Willing mother in GMKMCH
- Who are present at the setting during the time of data collection.
- Who is willing to participate in the study.

EXCLUSION CRITERIA

- Smoker uses tobacco product or uses a nicotine
- HIV, HTLV, Hep B, TB
- Has mastitis or fungal infection of nipple areola herpes simplex or varicella zoster infection mammary or thoracic region
- Is taking herbal supplementation or vitamins containing herbal

supplements

- Has ever had hepatitis or jaundice
- Had a blood transfusion given to the baby during pregnancy
- Organ transplantation mother
- Non Lactating mothers.

TOOLS OF RESEARCH

Structured questionnaire consist of three parts.

Part I - The demographic variables.

Part II- Knowledge based questionnaire regarding human milk banking.

Part III- Attitude based questionnaire regarding human milk banking.

COLLECTION OF DATA

The investigator collects data from lactating mothers.

- Written consent will be obtained from the authority prior to the data collection.
- Investigator introduces himself to the subject and notifies about aims, objectives, steps of the study and takes written consent.
- Selection of samples.

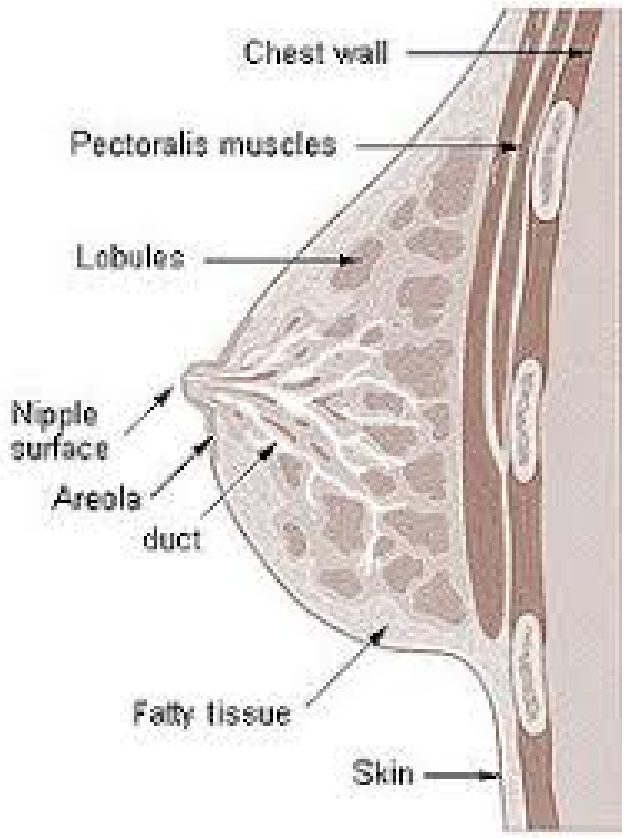
- Assess the knowledge and attitude of lactating mothers regarding human milk banking using structured questionnaire.
- Duration of data collection will be 12 weeks.

ANATOMY AND PHYSIOLOGY OF BREAST

The breast is accessory glands of female reproductive system. They are situated on the superficial fascia of the pectoralis major and serratus anterior muscles in the anterior chest wall. The breast extends vertically from the second to sixth ribs. Horizontally, it extends from the axilla to the lateral margin of the sternum. The part of the breast which extends up into the axilla reaching as high as the third rib is called the ‘Axillary tail of space’.

The breast consists of central protuberance called the nipple. The nipple is made up of erectile tissue. It is covered and surrounded by pigmented area called areola. The areola extends for a distance of 2.5 cm around the nipple. There are sebaceous glands at the edge of the area. These sebaceous glands secrete sebum to keep the nipple supple.

BREAST ANATOMY



MICROSCOPIC STRUCTURE

The breasts are compound secreting glands, composed mainly of glandular tissue arranged in lobes, approximately 20 in number. Each lobe is divided into lobules consisting of alveoli and ducts. The alveoli contain acini cells which produce milk and is surrounded by myoepithelial cells, which contracts and propel out the milk out. The breasts are richly supplied with blood. Small lactiferous ducts, carrying milk from the alveoli unite to from larger ducts. one large duct leaves each lobe and becomes wider to form a lactiferous sinus or ampulla

which acts as a temporary reservoir for milk. A lactiferous tubule from each sinus emerges on the surface of the nipple. Each breast functions independently of the other.

During pregnancy, estrogen and progesterone induce alveolar and ductal growth as well as stimulates the secretion of colostrum. Other hormones are also involved and they govern a complex sequence of events which prepare the breast for lactation.

PHYSIOLOGY OF LACTATION

During pregnancy, the hormones estrogen and progesterone activate the breasts and the breasts become larger and produce some fluid called colostrum. During the puerperium, they are expected to secret milk which is different from the colostrum. The secretion or production of milk is known as lactation.

The hormone which initiates lactation is called prolactin and is secreted from anterior pituitary gland. It is antagonized by the hormone estrogen. For this reason, prolactin does not function until there is high level of estrogen in the blood. The reduction in the level of estrogen occurs in the first two days of puerperium. This explains the secretion of milk from about the third day of puerperium. The effect of prolactin wears off after eight days.

MAMMOGENESIS:

In mammogenesis the ductal system grows and branches; the amount of connective tissue and supporting cells increases and fat are laid down in the breast. This is stimulated by the estrogens, growth hormone, prolactin, insulin and the adrenal corticoids.

Progesterone is involved in the last stages of mammogenesis after the ductal system has grown. It acts with the other hormones to develop the breast lobules and alveoli and adapts the alveoli to have secretory properties.

LACTOGENESIS

There are two main stages of lactogenesis:

Lactogenesis I: the ability of the mammary glands to secrete milk from mid-pregnancy to late pregnancy. Lactogenesis I starts from mid-pregnancy till 2 days after birth. It involves the differentiation of alveolar epithelial cells and the stimulation of milk synthesis by prolactin. Lactogenesis II: the formation of large amounts of milk after parturition. Lactogenesis II starts from day 3 postpartum to day 8. It is triggered by the reduction of progesterone. The breast becomes full and warm and produce large amounts of milk.

GALACTOPOIESIS

Galactopoiesis starts around 9 days after birth and finishes at the beginning of involution. It is the maintenance of milk secretion controlled by hormones. Breast size starts to diminish between 6 to 9 months after birth. The rate of milk formation normally decreases after 7-9 months; however milk production can continue for years if the child continues to suckle.

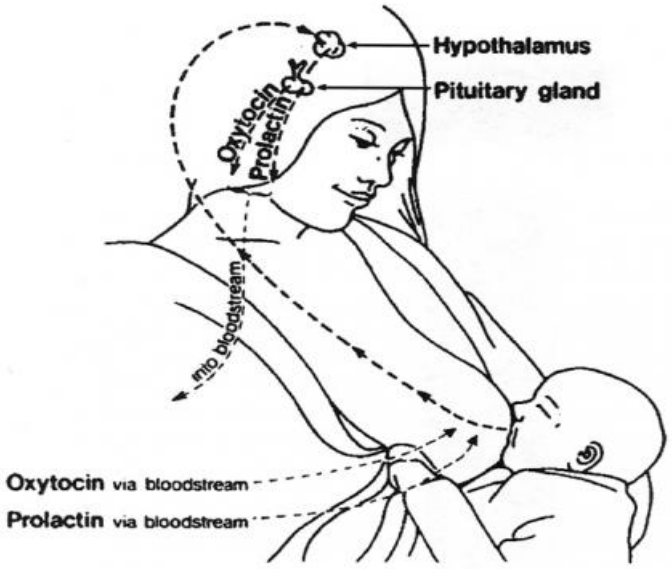
INVOLUTION

Involution is the loss of secretory function of milk, due to the accumulation of inhibiting peptides. It normally starts 40 days after the last breastfeed. The epithelial cells no longer require their secretory properties so they are removed by the process of apoptosis and replaced by adipocytes.

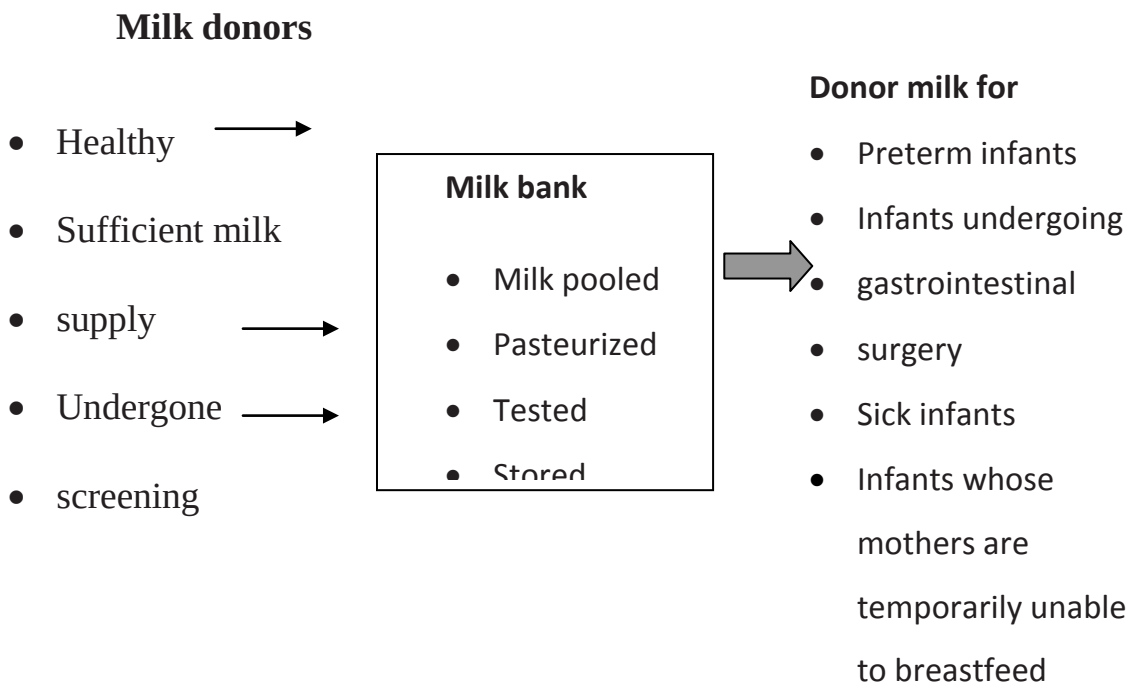
Reflexes that Help in Breastfeeding

Three reflexes, namely rooting, sucking and swallowing, help the baby in breastfeeding. When the breast nipple touches the cheek of the baby, baby will open the mouth and initiate sucking. This is rooting reflex. Coordination of sucking and swallowing occurs by 34 weeks of gestation. Sucking by the baby, prolactin (milk production) reflex and oxytocin (milk ejection) reflex initiate and maintain lactation in the mother. Sucking acts as the afferent stimulus for prolactin and oxytocin

reflexes. Oxytocin reflex also called ‘let down reflex’ effective only when the mother is relaxed and comfortable. Trickling of few drops of milk from the opposite breast while initiating feeding (let down reflex) gives a positive clue about milk production and ejection. Colostrum is replaced by ‘transition milk’ in a few days and later on by ‘mature milk’. It gradually increases till 6 months after delivery and later plateaus off. Average.



HUMAN MILK BANK IN GMKMCH



HUMAN MILK BANKING PROCESS

Milk banks generally follow standardized procedures for the collection and handling of donated milk. Donors are given prior instructions by the milk bank about recommended breast cleaning and breast pumping procedures. The bank provides containers for milk. Pooling of milk from several pumpings is often performed. Each container must carry the name, date, and time of expression. The milk remains in the freezer until it is delivered to the bank.

In the bank, milk is stored at –20 ° C. On the day before processing, the donated milk is placed in a refrigerator for overnight thawing. On the day of pasteurization, the milk from 3–5 donors is

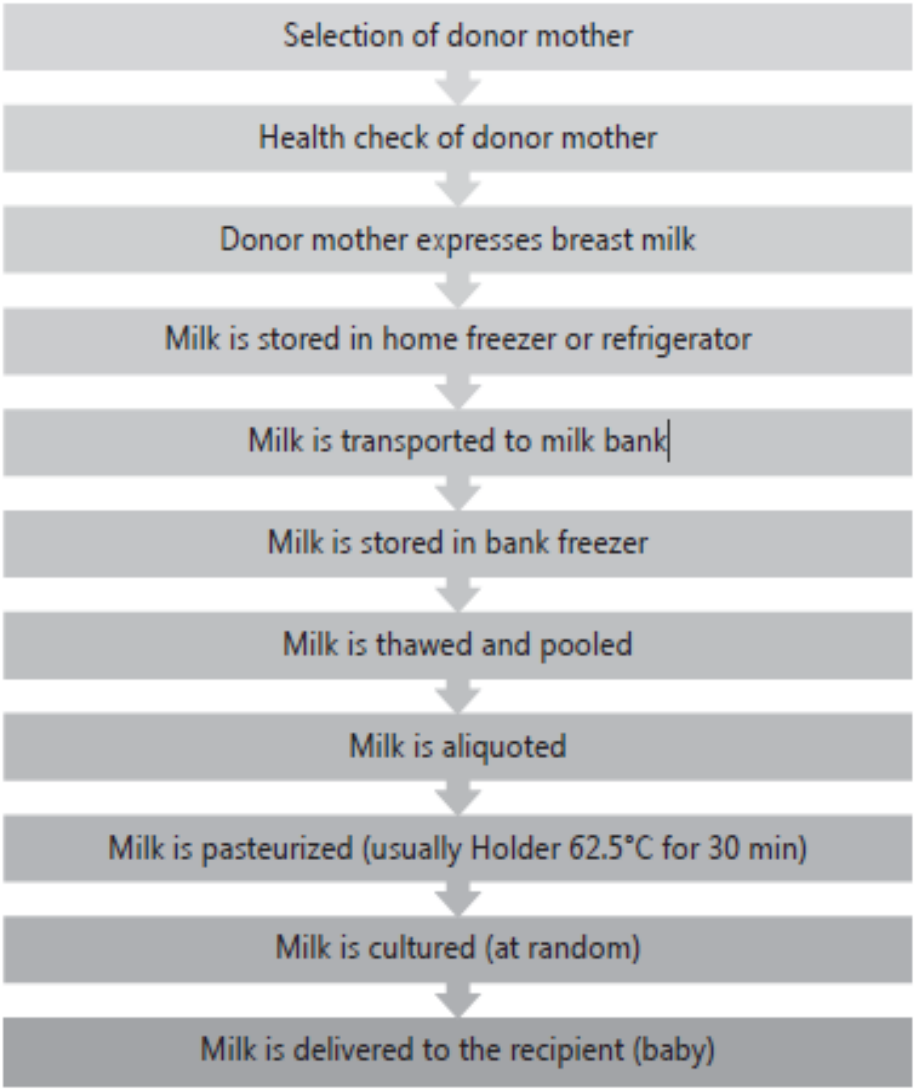
pooled. Pooling serves the purpose of distributing nutrients, such as protein and fat, as well as foreign substances evenly. After pooling, the milk is placed in individual 100 mL bottles. Pasteurization is carried out in a water bath at 62.5 ° C for 30 min followed by rapid cooling. Milk bottles are then stored at –20 ° C until. This method (Holder pasteurization) is widely followed to represent a good compromise between microbiological safety and nutritional/biological quality of donor milk Nevertheless, methods that lead to less nutrient loss and, perhaps, are less time consuming would be desirable and are being sought.

1. High-temperature short-time pasteurization at 72 ° C for 5–15 s is one such method provides a better compromise between microbiological safety and nutri-tional and biological quality of donor milk. The method is not used routinely due to lack of suitable instrumentation.
2. The combination of ultrasound and heat (thermoultrasonic treatment) is an emerging technique that allows milk to retain more of its bioactive components compared with thermal pasteurization . However, the current experimental system is limited to small volumes and needs to be scaled up.
3. High-pressure processing (HPP) is also a promising as an alternative to pasteurization. Total immunoglobulin A

immunoreactivity and lysozyme activity are significantly higher in HPP when compared with pasteurization. Besides, HPP is faster and probably more convenient than Holder pasteurization. It seems a promising technology, but further investigation is necessary before it can be used routinely.

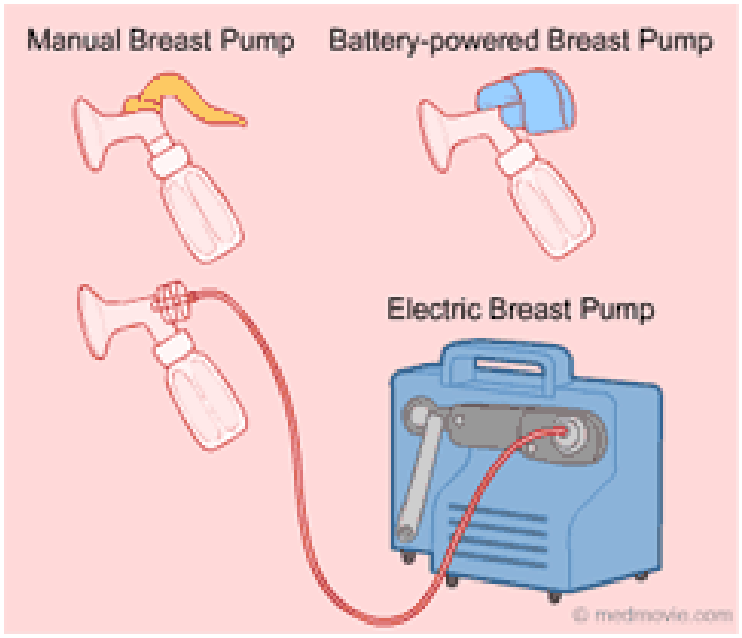
4. Finally, there is Ohmic heating, a new technology which is under investigation. Ohmic treatment is a thermal processing method wherein the food material, which serves as an electric resistor, is heated by passing an electric current through it, which leads to rapid and uniform heating. Like the thermal processing, Ohmic heating inactivates microorganisms by heat. The first experimental trials have shown no modification of the protein pattern of milk at a temperature of 72 ° C and only small changes at a temperature of 78°C.

HUMAN MILK BANKING PROCESS



GMKMCH HUMAN MILK BANK


தாய்ப்பால்
பாதுகாக்கும் அறை
STORAGE ROOM


Manual Breast Pump
Battery-powered Breast Pump
Electric Breast Pump
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THE COMPOSITION OF DONOR MILK

The protein and fat content of individual expressions of breast milk varies greatly which has led to the promotion of bedside human milk analyzers nutrient fortification of individual milk samples. However, with donor milk the variability of composition is greatly reduced due to pooling. Milk from multiple pumpings is usually pooled by the donor mother before delivery to the bank. Added to it, pooling of milk from multiple donors is performed by the milk bank, as a result of which the protein and fat content of pooled milk is quite stable and predictable. Michaelsen et al. reported that fat and protein concentration vary widely from sample to sample but that variability decreases sharply with pooling of samples from multiple donors. At the Mother's Milk Bank of Iowa, the nutrient content of 37 milk pools collected over a period of 2 years (2003–2005) was analyzed. The (true) protein concentration averaged 8.22 g/L with an SD of 0.59 g/L, and the fat content averaged 39.0 g/L with an SD of 3.51 g/L. The variability of composition is thus far lower than that between individual samples [28] Variability of the protein content is often the source of concerns about inordinately high intakes of protein. Less variations in composition of donor milk is superior to mother' own milk as there is little variation in protein and fat. The major

advantage with less variations in protein and fat is seen in the case of premature infants.

Component	Retention
Immune components	
C3 complement	0%
IgA	0–150%
IgG	0–82.8%
IgM	0%
Lactoferrin	0–123%
Lysozyme	0–393%
Cellular components	
Leukocytes	number decreased, 0% functionality
Lymphocytes	number decreased, 0% functionality
Enzymes, growth factors	
α1-antitrypsin	61.8%
Lipoprotein lipase	completely destroyed
Bile salt stimulated lipase	completely destroyed
Esterase	completely destroyed
Transforming growth factor α	93.9%
Transforming growth factor β_2	99%
Whey:casein ratio	whey decreased relative to fat
Nutrients	
Fatty acids	94–100%
Vitamin A	103%
Folic acid	65–95%
Vitamin B_1	65–85%
Vitamin B_2	77–94%
Biotin	102–110%
Niacin	100–106%
Pantothenic acid	93–98%
Vitamin B_6	85–93%
Vitamin C	64–94%
Vitamin D	103%
Vitamin E	106%
Zinc	redistribution of zinc pattern

T ble 1 2b Composition of nutrients in human and cow's milk (per 100 ml)
[36]

Fatty acids	Human milk	Cow's milk
Fat (g)	3.8	3.7
Linoleate (g)	0.51	0.07
Protein (g)	1.2	3.3
Carbohydrate (g)	7.0	4.8
Minerals (g)	0.21	0.7
Vitamin A (ng)	53	34
Vitamin D (IU)	0.4-10	0.3-4
Vitamin E (mg)	0.2 0.1	
Vitamin K, (ng)	0.3	0.7
Vitamin C (mg)	4.3	1.8
Thiamine (BJ (ng)	16	42
Riboflavin (B_2) (ng)	43	157
Niacin (PP) (|xg)	172	85
Vitamin B_6 (ng)	11	48
Folic acid (ng)	0.18	0.23
Pantothenic acid (mg)	0.25	0.34
Vitamin B_{12} (ng)	0.18	0.4
Biotin (ng)	2.0	22
Choline (mg)	1.3	1.2
Inositol (mg)	45	8
Taurine (mg)	5	0.5
Carnitine (mg)	0.8	1
Sodium (mg)	16	58
Potassium (mg)	55	137
Chloride (mg)	43	103
Calcium (mg)	33	125
Phosphorus (mg)	15	96
Magnesium (mg)	4	12
Iron (mg)	0.05-0.15	0.1
Iodine (|ig)	7	21
Copper (mg)	0.04	0.03
Zinc (mg)	0.53	0.38
Manganese (ng)	traces	traces

DONOR MILK IS AS GOOD AS MOTHER'S MILK

The major concern is that the donor milk which undergoes pasteurization losses the protective effects of human milk due to thermal treatment.. Studies assessing milk components before and after pasteurization have documented that indeed several important components of human milk are reduced in concentration or are eliminated altogether, as summarized in Table 3. Pasteurizaton affects anti-infective and cellular components, growth factors, and some nutrients, depending on the heat and duration of exposure. Enzymes are most heat-sensitive while immune components are compromised but not completely destroyed.

Processing of human milk affects unsaturated fatty acids and damages the membrane of milk fat globules. Human milk contains stem cells with multilineage properties and variable expression of pluripotent genes which is normally found in human embryonic stem cells . It is likely that these stem cells are destroyed during heat treatment. On the other hand, some important protective components such as the oligosaccharides are essentially resistant to the effects of heat.

Given these effects of high-temperature processing, it is expected that the protective effects of human milk might be diminished but not abolished altogether. That is exactly what the literature shows. In 5 trials

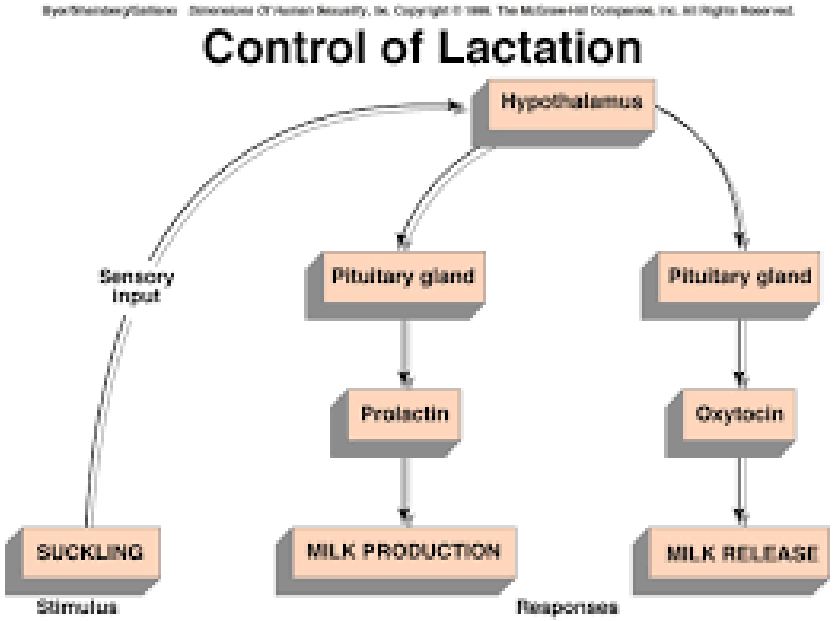
comparing formula with donor milk with regard to the incidence of necrotizing enterocolitis, the risk of necrotizing enterocolitis was nonsignificantly diminished in each trial. However, collectively, the 5 trials showed a significant protective effect of donor milk compared to formula

A direct comparison of fresh against pasteurized human milk performed by Narayanan et al. showed that there is reduction in immunity against infection (14.3 vs. 10.5% infection). But with formula feeds reduction in immunity is even higher (33.3% infection). It is thus evident that the beneficial effects of pasteurized human milk are diminished vis-à-vis fresh milk but that enough of the protective effects remain to render donor milk the feeding of choice for premature infants in the absence of any or sufficient maternal breastmilk.

EXPRESSING MAMA

BREAST MILK STORAGE TIMES

Place	Temperature		Storage time
Room	60°F / 15 °C (cool)		24 hours
	66-72°F / 19-22 °C (normal)		10 hours
	79°F / 25°C (warm)		4-6 hours
	86-100°F / 30-38°C (hot)		4 hours
Ice Cooler	46-59°F / 8-15 °C		24 hours
Fridge	32-39°F / 0-4 °C		8 days
Freezer	Small freezer compartment	30°F / -1°C	2 weeks
	Freezer	23°F / -5 °C	3-4 months
	Deep Freezer	0°F / -19°C	6 months +



THE RECIPIENTS

PDHM can be prescribed on priority for preterm babies and sick babies, babies of mothers with postpartum illnesses, and babies whose mothers have lactation failure, till their milk output improves. Therapeutic benefits of breastmilk are noted in short gut syndrome, sepsis, and post-surgical gut healing in omphalocele, gastroschisis, bowel obstruction and intestinal fistulas. Exclusive diets of preterm formula versus human milk in extremely preterm infants showed that, there was a significantly greater duration of parenteral nutrition and higher rate of surgical necrotizing enterocolitis (NEC) in infants receiving preterm formula. It is possible to administer trophic feeds (gut priming by early

enteral feeds) exclusively with human milk in VLBW infants with banked human milk .

If PDHM supplies are sufficient donor milk may be supplied for:

- Absent or insufficient lactation: Mothers with multiple births, who can not secrete adequate breastmilk for their neonates initially.
- For babies of non-lactating mothers, who adopt neonates and if induced lactation is not possible.
- Abandoned neonates and sick neonates.
- Temporary interruption of breastfeeding.
- Infant at health risk from breast milk of the biological mother.
- Babies whose mother died in the immediate postpartum period.

DONOR POPULATION

The donor population comprises of healthy lactating mothers with healthy babies, who are voluntarily willing to give their extra breast milk for other babies without compromising the nutritional needs of their own baby. The donors can include mothers attending well baby clinics, mothers whose babies are in neonatal intensive care units, those who have lost their babies but are willing to donate their milk, or lactating working staff in the hospital, and motivated mothers from the community. Donors are not paid for their donations. Spreading awareness about possibility of breast milk donation in society by various means including mass

communication can help in motivating donors. NGOs, social clubs and college students can play a good role in it. Criteria for breast milk donors are outlined in .

CRITERIA FOR BREASTMILK DONORS

A lactating woman who:

- is in good health and health-related behavior, and not on regular medications or herbal supplements (with the exception of prenatal vitamins, human insulin, thyroid replacement hormones, nasal sprays, asthma inhalers, topical treatments, eye drops, progestin-only or low dose estrogen birth control products);
- is willing to undergo blood tests for screening of infections; and
- has enough milk after feeding her baby satisfactorily and baby is thriving nicely.

A donor is disqualified who:

- uses illegal drugs, tobacco products or nicotine replacement therapy or having positive blood test result for HIV, HTLV, Hepatitis B or C or syphilis;
- is herself or having a sexual partner suffering from HBV, HIV, HCV and venereal diseases OR either one has high risk behavior of contracting it in last 12 months;

- has received organ or tissue transplant, any blood transfusion/blood product within the last 12 months.
- is taking radioactive or other drugs or has chemical environmental exposure or mega doses of vitamins or over the counter prescriptions, which are known to be toxic to the neonate and excreted in breastmilk; or
- having fungal infection in the nipple or areola or having mastitis, active herpes simplex or varicella zoster infections in the mammary or thoracic region.

GENERAL GUIDELINES FOR STAFF OF THE HUMAN MILK BANK

- Standard operating procedures (SOP) of the bank (which should be displayed at proper places) should be adhered to.
- Hygienic practices like proper hand washing, wearing gowns, mask, gloves, trimming nails, locking long hairs should be maintained.
- Gloves should be changed between handling raw and heat-treated milk.
- Staff should undergo regular health checks and has to be immunized against Hepatitis B.
- There should be a program for ongoing training of the staff.

Mother's own milk	Helps in bonding and lactation Good balance of nutrients (may need supplemental calcium, iron or vitamin D in some situations) Prevents infections. Easily assimilated. Supports normal gut development and normal gene expression
Donated fresh preterm milk	Good balance of nutrients (may need supplemental calcium and vitamin D) Prevents general infections and those to which mother is exposed but not from baby's environment Easily digested.helps normal gut development and gene expression
Donated fresh term mature milk	Prevents general infections Easily digested, but lacks adequate protein. Supports normal gut development and normal gene expression .Usually foremilk, so may be fat deficient.
Pasteurized donated human milk	Immunologic factors such as secretory IgA, bifid growth factor and lysozyme (0-30% destroyed), lactoferrin (57% destroyed) and IgG (34% destroyed) are affected so less effective in fighting certain infectious agents May support normal gut development and normal gene expression HTLV, HIV, CMV are destroyed. Easily digestable.

Preterm formula	Nutrients selected to be adapted to special needs but do not replicate human milk .Not easily digestible as human milk .No immunologic properties and increased risk of infections. Does not support gut development or normal gene expression
Ordinary formula	Wrong balance of nutrients No immunologic properties, and has increased risk of severe reactions and infections. Less optimal growth and development and is difficult to digest. Does not support gut flora or normal gene expression.

The Advantages of Breastfeeding :

The numerous advantages of breast milk are beyond description and understanding.

a) The physical benefits are optimum fluidity and warmth.

b) It is very economical. The approximate cost to artificially feed a baby less than 6 months of age is estimated to be more than one-third of the average family income, i.e., almost more than the per capita income. We are unable to afford this at national level, community level or at family level.

c) It is very convenient. There is no need to carry or sterilize utensils. It can be made available anywhere at any time.

d) It is very physiological. The protein in breast milk is easily digestible. The lipids are rich in essentia] fatty acids, long chain polyunsaturated fats (LCP), phospholipids and prostaglandin precursors. It contains enzymes such as amylase, lipoprotein lipase, bile salt stimulated lipases (BSSL), oxidases, lactoperoxidases, leucocyte myeloperoxidase etc. which increases digestibility and act as defence against microbes. Growth regulating factors, Growth promoting factors and Growth modulators are also a component of breast milk.. LCPs in the breast milk promote brain growth and reduce dyslexia and hyperactivity.

e) Biochemically it is superior. Breast milk contains whey protein (80%) which is rich in a-lactalbumin and lactoferrin and 20% of the breast milk is casein. Lactablumin contains tryptophan which plays an important role as neurotransmitter. Lactoferrin helps in absorption of iron and zinc and also has bacteriostatic action. It binds with iron and makes it unavailable to the bacteria. Alpha-casein and lactoglobulin are absent in human milk. Even though protein is lower in breast milk, non-protein nitrogens are high The non-protein nitrogen in breast milk plays a significant role in the

growth and development of the infant. It also contains binding proteins that bind thyroxin, Bp , vitamin D etc. The calcium-phosphorous ratio is greater than 2 and it enhances calcium absorption. Lactose also helps in calcium and magnesium absorption. The solute load is low due to low level of protein, and certain minerals. It ensures gentle load on immature infant's kidney. At the same time there is provision of optimum vitamins and mineral essential for healthy growth.

f) Breast milk has the least chance of contamination microbiologically. Lactoferrin inhibits E coli by its bacteriostatic action.It binds iron and makes it unavailable to E coli. Peroxidases and lipases lyse bacteria. Bile salt stimulated lipase (BSSL) kills amoeba and Giardia. Para amino benzoic acid (PABA) enhances protection against malaria. The relative deficiency of PABA in human milk leads to supression of parasites to subclinical levels and sufficient antigenic stimulus for immune response. Maternal antibodies and T lymphocytes also offer some protection against malaria. The bifidus factor and acidic pH helps in colonisation of Lactobacillus bifidus. Breastfeeding helps in the exchange of microbes and exposure to microbiota in the immediate environment via skin to skin contact between mother and infant. In

breastfed infants bifidobacteria constitute from 60 to 90% of the total faecal microbiota, while lactobacilli comprise less than 1 %.

g) As breast milk is non allergic, it makes it immunogenicity safe. It supplies passive immunity and acute phase reactants. Macrophages, lysozymes and complements confers immunity to the baby. Nutritional composition of breast mik supports the gut microflora which enhances the immunity of the infants. mmunoglobulins, secretory components and secretory IgA (SIgA) are also present in breast mik. SIgA offers surface protection to the respiratory and GI tracts. Immunoglobulins other than SIgA are generally split up in the gut. Plasma cells in the mammary gland produce SIgA from Gut associated Lymphoid tissue (GALT) and Bronchus Associated Lymphoid Tissue (BALT).In the second month of lactation IgA and IgM levels become undetectable . Secretory IgA may resist proteolytic degradation in the neonatal gut and may offer some protection. Breast milk supplies T and B lymphocytes. T lymphocytes helps in transfer of immunological memory.Breast milk contains 'bioactive factors' in milk are proteins like lactoferrin, non-protein nitrogen like nucleotides, enzymes, hormones, growth factors, oligosaccharides, mucins, probiotic substances and polyamines. The bifidus factor helps in

the growth of lactobacilli. Spermine, spermidine and putrescine initiate cell growth and differentiation.

h) Psychologically,Emotional stability is enhanced by breast milk due to close contact.

I) Decreases postpartum bleeding and also helps in the involution of uterus through oxytocin. It helps to reduce calories has accumulated during pregnancy due to various hormones. The incidence of breast and ovarian cancers also decreased.

j) Epidemiologically it decreases morbidity and mortality. It is estimated that a breastfed baby is 14 times less likely to die from diarrhoea, 4 times less likely to die from respiratory diseases and 2.5 times less likely to die from other infections than a non-breastfed infant.

The Factors in Breast Milk that Promote Growth and Mental Development:

Breast milk plays a role in various stages of cell division. It contains amino acids specific for brain development. Sulphur-containing amino acids are a component of breast milk.. Cysteine:methionine ratio is high which helps in CNS development. Taurine is found abundantly in breast milk which is an important neurotransmitter and neuromodulator

for brain and retina. The content of aromatic amino acids are low in breast milk. The high ratio of tryptophan to neutral amino acid ratio which controls brain serotonin synthesis. The amino acids are mostly in ‘trans’ form when they change to ‘cis’ form in transwaved frmula, they become neurotoxic. Breast milk contains essential fatty acids (EFA) and Long Chain Poly unsaturated Fatty Acids (LCPUFAs) in a different ratio which depends on the diet of lactating mother. Brain lipids are mostly long chain polyunsaturated fatty acids (LCPs) which are derived from metabolic conversion of essential fatty acids (linoleic and linolenic acids).Linoleic acid (of)) is a precursor of arachidonic acid and linolenic acids for DHA (a8). LCPUFAs are playing very important biological role in infancy. Thus arachidonic acid and docosa hexaenoic acid (DHA) plays an important role in neural and visual development. Arachidonic acid plays essential role in immunity and inflammatory modulation. The optimal balance of LCPUFAs (omega 3 & 6 series) are influencing the right immune response maturation in infants. Placenta is the source of these fatty acids inutero whereas breast milk is the source after delivery. DHA concentration is very low in formula-fed infants due to low conversion of linolenic acid into DHA in infancy. Thus the supplementation of balanced LCPUFAs is recommended for formula-fed infants. The EFA helps in myelination of brain. Palmitic acid in beta position ensures adequate fat absorption from the gut.

Presence of choline, acetylcholine, phospholipid precursors and carnitine ensures optimum metabolism and brain development. Preterms have low levels of Carnitine and supplementation is required. Growth factors like thyroid stimulating hormone (TSH), thyroxine, growth hormone releasing factor (GHRF), insulin, somatostatin, epidermal growth factor, prolactin, neurotensin, nerve growth factor (NGF) are abundantly present in breast milk. Human beta casomorphin, a CNS growth factor, mediates high concentrations of hormones in breast milk than in maternal serum. NGF leads to dendritic arborization. Enzymes like lysozyme, peroxidase and xanthine oxidase that promote cell maturation are found to be more in colostrum. Breast milk ensures better oxygen saturation and increases the bioavailability of trace elements like copper, magnesium, cobalt, selenium, iron, zinc etc. It contains less poisonous residues than cow's milk which are neurotoxic like chromium, aluminium, manganese etc. Exclusively breastfed preterms are found to have higher IQ scores and lesser neurological sequelae. They are better adjusted and have better cognitive abilities.

Comparison between Human Milk and Cow's Milk:

Milk is species specific. Cow's milk with its high protein and solute load is suitable for the calf which is ambulant and self-feeding within a few hours after delivery. Due to the low protein and solute load, breast

milk is suitable for the slower somatic growth in the baby and for rapid brain growth in the first two years of life. Since both of them contain equal calories , it is not advisable to dilute cow's milk, however more water is needed to excrete the high solute load in cow's milk. American Academy of Pediatrics (AAP) and European Society for Paediatric Gastroenterology and Nutrition (ESPGAN) do not recommend unmodified cow's milk for infant feeding. The major differences between human and cow's milk are given in table

a) Protein: Cow's milk contain three times more protein than that in human milk. However, it is biochemically different and less digestible. It forms thick curds. Casein content is four times more in cow's milk which requires more HC1 for digestion. i) Casein: Alpha casein is maximum in cow's milk, whereas beta casein is more in human milk. Alpha casein may act as an allergen.
b) ii) Whey protein: The content of whey protein is four times more in human milk than in cow's milk. In human milk, main content is lactalbumin and lactoferrin (80%). In cow's milk, it is mainly lactoglobulin which is in negligible amount in human milk. This causes intolerance to cow's milk. Lactoferrin has bacteriostatic action and it increases iron, zinc and magnesium absorption. It binds iron and makes it unavailable to E.coli. Among the amino

acids, glutamic acid is maximum and glycine is absent in human milk.

iii) Other components in human milk: Albumin, essential amino acids, lysozymes, immunoglobulins like IgG, IgM, SIgA, acute phase reactants like alpha-1 antitrypsin, alpha-1 antichymotrypsin, binding proteins of thyroxine, corticosterol, vitamin D, folate and B]2, secretory components, growth modulators, growth factors, digestive enzymes like milk lipases, amylase etc., are present in human milk. The peroxidase activity is due to Leucocyte myelo-peroxidase and lactoperoxidase. In frozen banked breast milk, oxidation can lead to cholesterol oxides that are angiotoxic. Milk lipases kill amoeba and giardia: Milk lipases are of two types: (a) Lipoprotein lipase (LL) and (b) Bile salt stimulated lipase (BSSL). They helps in fat absorption and hydrolyse bacterial lipids. Lingual lipase that increases on sucking is not active in gavage feeding and hence milk lipase is very important. Bifidus growth-promoting factor promotes lactobacilli. Lactobacilli and lactic acid act as probiotic and help in digestion and it is resistant to proteolysis in gut and offers surface protection to GI and respiratory tracts. Growth factors are of two types:

(1) Growth regulating factors—somatostatins and

(2) Growth mediating factors—somatomedins A, C and insulin like growth factors—IGF1, IGF11. (IGF1 and somatomedin C are identical.)

Table 1.2a Comparison—human and cow's milk (100 ml)

Item	Human milk	Cow's milk
Non-protein nitrogen	0.2 g	0.03 g
Protein	1.1 g	3.0 g
Casein: Whey	40:60 (lactalbumin & lactoferrin)	80:20 (lactoglobulin)
Lactose	**7 g**	**4.5 g**
Fat	3.8 g	3.7 g
EFA	13%	2%
P/S ratio	1.2:1	1:2
Ash/minerals	0.25 g	0.75 g
Ca:P ratio	> 2	< 2
Sodium	0.7 mEq	2.2 mEq
Potassium	1.4 mEq	
Vit. K	15 ng	60 ng
Vit. E	2 mg	0.4 mg
Osmolarity	7.9 mOsm	22.1 mOsm
Energy: Protein ratio	70:1	25:1
Calories	67 cal	67 cal

c) **Lipids**: Human milk contains unsaturated fat, essential fatty acids, prostaglandin precursors, fat-soluble vitamins, steroids, LCPs and phospholipids.Maternal fat intake determines the milk fat. Vegetarian diet increases polyunsaturated fatty acids (PUFA) and sea fish intake increases the levels of eicosa pentaenoic acid (EPA) and docosa hexanoic acid (DHA). High carnitine content in human

milk increases energy metabolism by the process of mitochondrial oxidation and transport of EFA. Cow's milk contains mostly saturated fat. The ratio of polyunsaturated to saturated fat (P/S) is 1.2:1 in breast milk compared to 1:2 in cow's milk. c) Carbohydrate: Human milk is the sweetest milk , due to lactose content. Lactose is the main carbohydrate in breast milk. Breast milk enhances the growth of healthy intestinal flora, enhanced calcium absorption. Human milk is the only natural source of lactose. It is a disaccharide made of glucose and galactose, and thus it is the only source of galactose for optimal brain development of growing infants. Apart from lactose, galacto-oligosaccharides (GOS), contributes to development of microflora and digestion. Cow's milk contain only half the lactose content of the human milk and %GOS also negligible. Thus the usage of cow's milk in infancy does not support proper development of healthy intestinal flora, d) Vitamins: Human milk is a good source of vitamins except vitamin K and D, especially in vitamin D - deficient mothers. UV light helps in the synthesis of vitD from cholesterol. Cow's milk is deficient in more number of vitamins, e)Minerals: . Cow's milk has excess of sodium, potassium and chloride and thus increasing the solute load.Though breast milk contains small amount of iron, zinc

etc..Breast milk contains carrier proteins like lactoferrin which makes bioavailability better than cow's milk.

Table 1.2c Comparison of fatty acid profile of human and cow's milk

Fatty acids	Human milk	Cow's milk
Saturated		
4:0 butyric		3.0
6:0 caproic		1.0
8:0 caprylic	0.19	1.0
10:0 capric	1.1	3.0
12:0 lauric	4.8	2.0
14:0 myristic	7.2	10.7
16:0 palmitic	23.4	26.3
18:0 stearic	8.0	12.1
Monounsaturated		
16:1 palmitoleic	3.4	4.5
n-9 18:1 oleic	35.3	33.3
Polyunsaturated		
n-6 18:2 linoleic	13.4	2.0
18:3 y-linoleic	0.17	
20:4 arachidonic	0.45	0.1
n-3 18:3 a-linolenic	0.94	1.0
20:5 EPA	0.18	
22:5 DPA	0.17	
22:6 DHA (cervonic)	0.3	

RESULTS AND ANALYSIS

EDUCATION : **DONOR**

0	Illiterate	2
1	Primary	25
2	Secondary	55
3	Tertiary	18

HAD HEARD OF BREAST MILK BANK

1	Yes	80
0	No	20

SOURCE OF INFORMATION

1	HEALTH INSTITUTION	60
2	MASS MEDIA	15
3	FRIENDS AND RELATIVES	5

DONAR QUESTIONS

1	For my baby in nicu	30
2	Excessive milk production beyond need	15
3	Avoid wastage	5
4	Donation through health worker motivation	15
5	Know whether breast milk is better than infant formula	5
6	Aware of benefits to mother though breast milk donation	2
7	Lactating mother with dead children	1
8	Do support the promotion of health of children	1
9	Satisfaction that I can help a baby in need	1
10	Do support promotion of health of children	0
11	A good idea.	0
12	In regard to access to information about the importance of donating milk.	0
13	Help mothers who are incapable of breast feeding.	0
14	Donate milk for the benefit of premature children.	0
15	Emotional influences of important persons.	0

REASON FOR REFUSAL OF DONAR

1	Fear of not having enough milk for own baby	10
2	Against traditions and customs	2
3	Inadequate milk	6
4	Spread of infections	5
5	Family not cooperative	2
6	Has mastitis or other infections	0
7	Not interested	0
8	Self esteem	0
9	No time	0
10	Unknown reason	0

EDUCATION: **RECEIPIENT**

0	Illiterate	3
1	Primary	20
2	Secondary	63
3	Tertiary	14

HAD HEARD OF BREAST MILK BANK

1	Yes	84
0	No	16

SOURCE OF INFORMATION

1	Health institution	68
2	Mass media	14
3	Friends and relatives	2

REASON FOR RECEIVING *Q*

1	Insufficient milk production	30
2	Breast milk is the best source of food for baby	7
3	Advised by health worker	23
4	Infant health risk	5
5	Orphan and abandoned babies	2
6	Sick mother unable to feed	3
7	Milk formula allergies	0
8	Adoption mother / Biological mother	0
9	For my Twin babies	0
10	Babies with dead mother	0
11	Know whether breast milk is better than infant formula	0
12	Will u accept only your relatives breast milk	0
13	Are you receiving milk as you don’t have any option	0
14	Does your community prohibit you from receiving	0
15	Are you accepting because of motivation	0

REASON FOR REFUSAL *R*

1	Fear of transmission of infections	14
2	Fear of not having enough milk for own baby	8
3	Against traditions and customs	4
4	Family not co-operative	2
5	Milk bank not accessible	2
6	Do not like the idea	0
7	Lack of knowledge	0
8	Lack of hygiene	0
9	Spouse and family may not like it	0
10	Self esteem	0

Donor Descriptive Statistics

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Age	100	17	34	23.67	3.671
Valid N (listwise)	100				

Parity * Donor

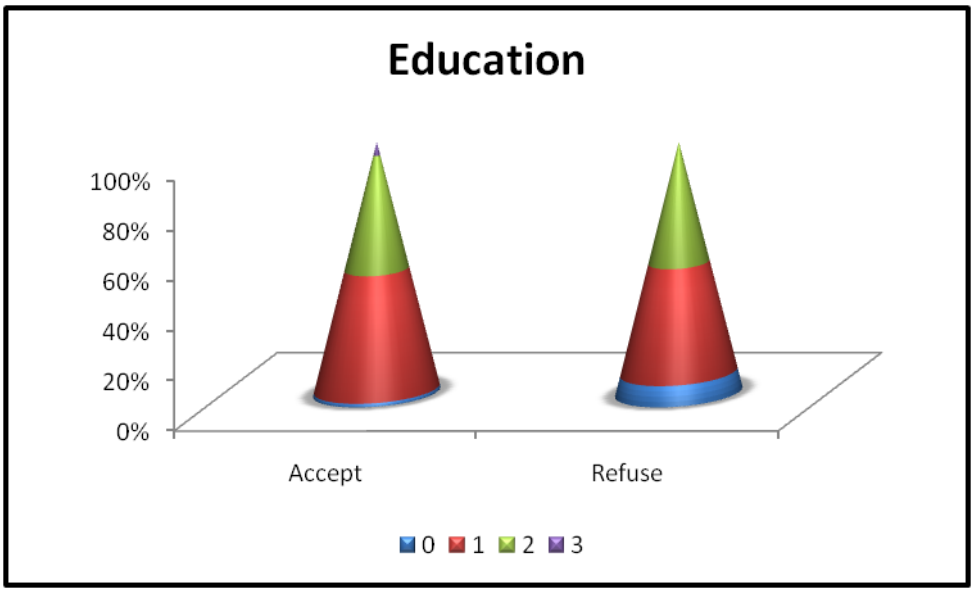
			Donor		Total
			Accept	Refuse	
Parity	1	Count	45	14	59
		% within Donor	60.0%	56.0%	59.0%
	2	Count	22	6	28
		% within Donor	29.3%	24.0%	28.0%
	3	Count	6	4	10
		% within Donor	8.0%	16.0%	10.0%
	4	Count	1	1	2
		% within Donor	1.3%	4.0%	2.0%
	5	Count	1	0	1
		% within Donor	1.3%	0.0%	1.0%
Total		Count	75	25	100
		% within Donor	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.441[a]	4	.655
Likelihood Ratio	2.482	4	.648
Linear-by-Linear Association	.483	1	.487
N of Valid Cases	100		

Education *
Donor

			Donor		
			Accept	Refuse	Total
Education	0	Count	1	2	3
		% within Donor	1.3%	8.0%	3.0%
	1	Count	36	11	47
		% within Donor	48.0%	44.0%	47.0%
	2	Count	34	12	46
		% within Donor	45.3%	48.0%	46.0%
	3	Count	4	0	4
		% within Donor	5.3%	0.0%	4.0%
Total		Count	75	25	100
		% within Donor	100.0%	100.0%	100.0%



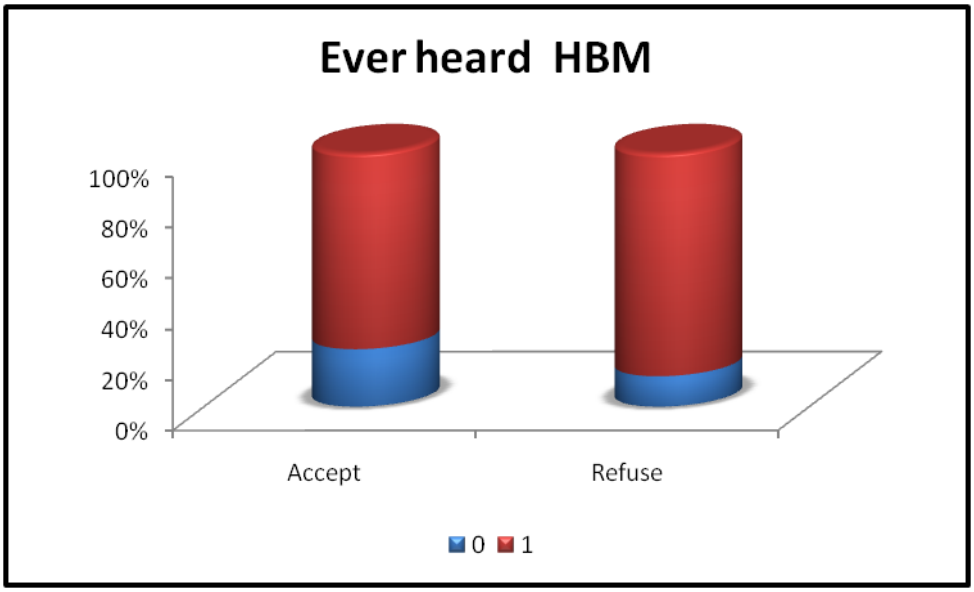
Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.204[a]	3	.240
Likelihood Ratio	4.696	3	.195
Linear-by-Linear Association	1.024	1	.312
N of Valid Cases	100		

a. 4 cells (50.0%) have expected count less than 5. The minimum expected count is .75.

Ever heard HBM * Donor

			Donor		Total
			Accept	Refuse	
Ever heard HBM	0	Count	17	3	20
		% within Donor	22.7%	12.0%	20.0%
	1	Count	58	22	80
		% within Donor	77.3%	88.0%	80.0%
Total		Count	75	25	100
		% within Donor	100.0%	100.0%	100.0%



Chi-Square Tests

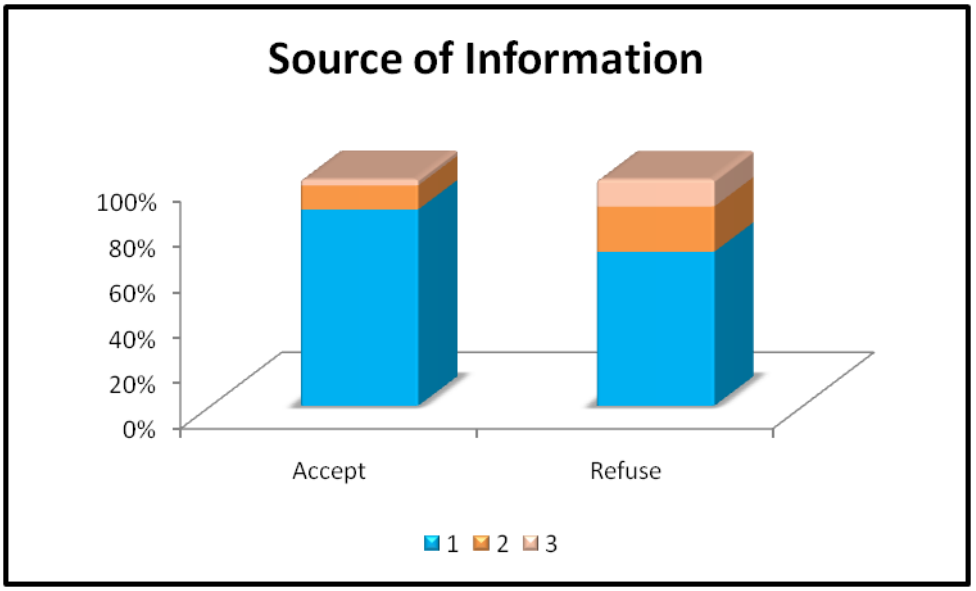
	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.333[a]	1	.248		
Continuity Correction[b]	.750	1	.386		
Likelihood Ratio	1.452	1	.228		
Fisher's Exact Test				.387	.196
Linear-by-Linear Association	1.320	1	.251		
N of Valid Cases	100				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.00.

b. Computed only for a 2x2 table

Source of Information * Donor

			Donor		
			Accept	Refuse	Total
Source of Information	1	Count	65	17	82
		% within Donor	86.7%	68.0%	82.0%
	2	Count	8	5	13
		% within Donor	10.7%	20.0%	13.0%
	3	Count	2	3	5
		% within Donor	2.7%	12.0%	5.0%
Total		Count	75	25	100
		% within Donor	100.0%	100.0%	100.0%



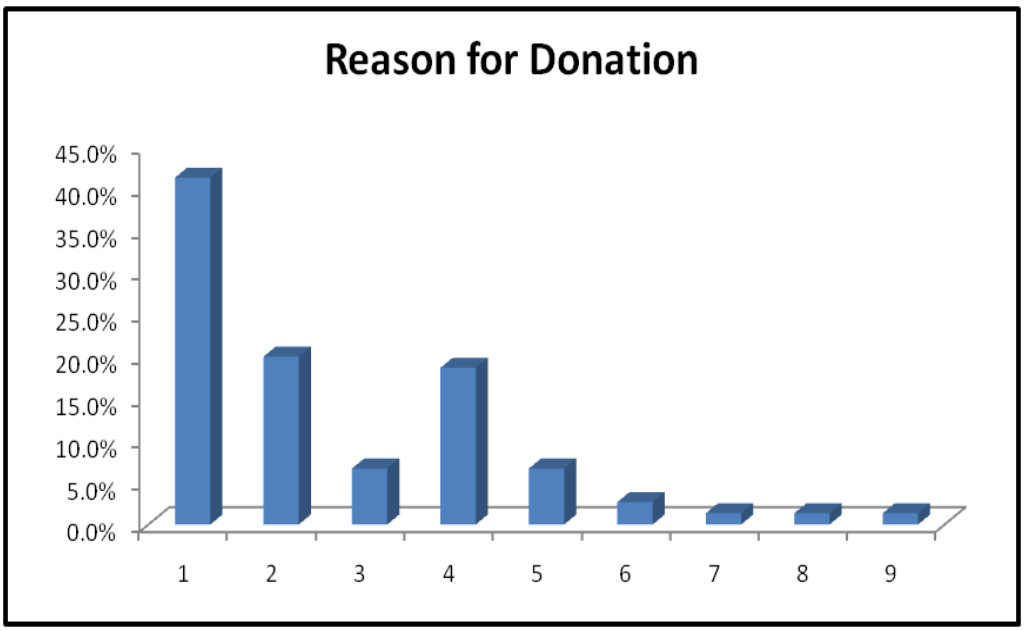
Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.320[a]	2	.070
Likelihood Ratio	4.711	2	.095
Linear-by-Linear Association	5.252	1	.022
N of Valid Cases	100		

a. 3 cells (50.0%) have expected count less than 5. The minimum expected count is 1.25.

Reason for Donation * Donor

			Donor	
			Accept	Total
Reason for Donation	1	Count	31	31
		% within Donor	41.3%	40.8%
	2	Count	15	15
		% within Donor	20.0%	19.7%
	3	Count	5	5
		% within Donor	6.7%	6.6%
	4	Count	14	15
		% within Donor	18.7%	19.7%
	5	Count	5	5
		% within Donor	6.7%	6.6%
	6	Count	2	2
		% within Donor	2.7%	2.6%
	7	Count	1	1
		% within Donor	1.3%	1.3%
	8	Count	1	1
		% within Donor	1.3%	1.3%
	9	Count	1	1
		% within Donor	1.3%	1.3%
Total		Count	75	75
		% within Donor	100.0%	100.0%



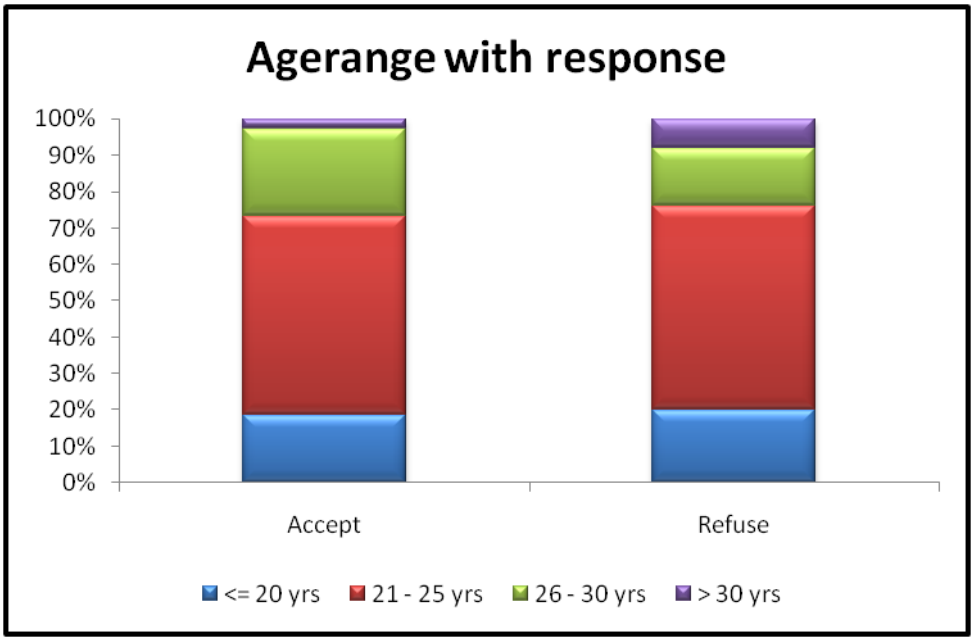
Chi-Square Tests

	Value
Pearson Chi-Square	1
N of Valid Cases	21

a. No statistics are computed because Receive is a constant.

Age range * Donor

			Donor		Total
			Accept	Refuse	
Agerange	<= 20 yrs	Count	14	5	19
		% within Donor	18.7%	20.0%	19.0%
	21 - 25 yrs	Count	41	14	55
		% within Donor	54.7%	56.0%	55.0%
	26 - 30 yrs	Count	18	4	22
		% within Donor	24.0%	16.0%	22.0%
	> 30 yrs	Count	2	2	4
		% within Donor	2.7%	8.0%	4.0%
Total		Count	75	25	100
		% within Donor	100.0%	100.0%	100.0%

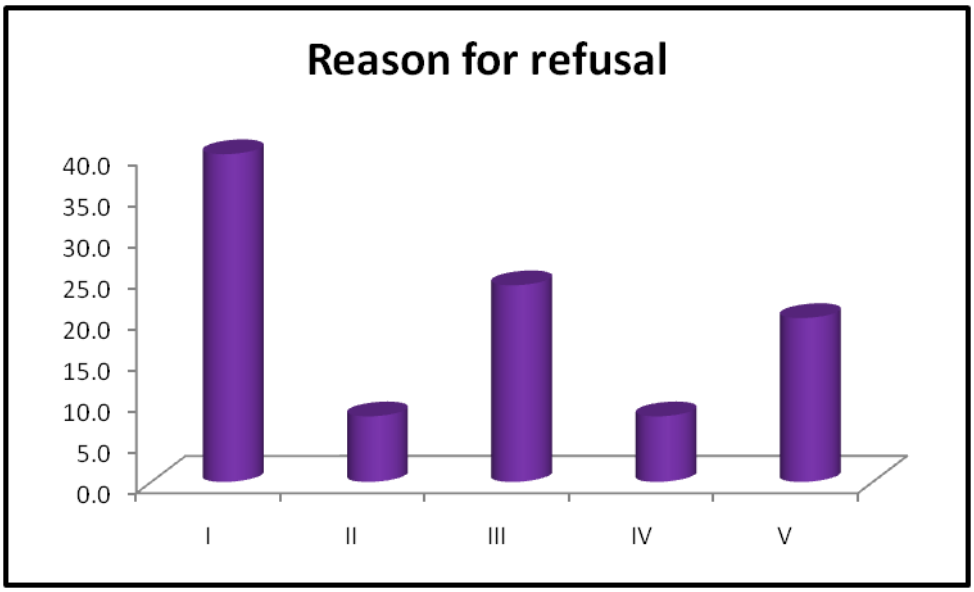


Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.902[a]	3	.593
Likelihood Ratio	1.759	3	.624
Linear-by-Linear Association	.006	1	.939
N of Valid Cases	100		

a. 3 cells (37.5%) have expected count less than 5. The minimum expected count is 1.00.

	Reason for refusal
I	40.0
II	8.0
III	24.0
IV	8.0
V	20.0


Reason for refusal
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
I
II
III
IV
V

RECEIPIENT

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Age	100	17	38	23.70	3.836
Valid N (listwise)	100				

Parity * Receiver

			Receiver		
			Accept	Refuse	Total
Parity	1	Count	40	16	56
		% within Receiver	57.1%	53.3%	56.0%
	2	Count	17	9	26
		% within Receiver	24.3%	30.0%	26.0%
	3	Count	11	4	15
		% within Receiver	15.7%	13.3%	15.0%
	4	Count	1	0	1
		% within Receiver	1.4%	0.0%	1.0%
	5	Count	1	1	2
		% within Receiver	1.4%	3.3%	2.0%
Total		Count	70	30	100
		% within Receiver	100.0%	100.0%	100.0%

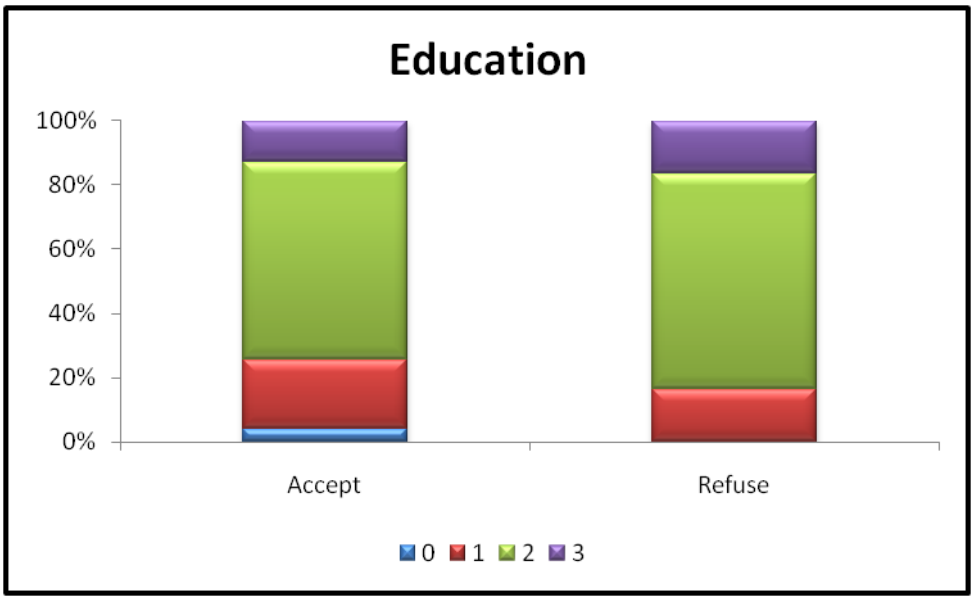
Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.207[a]	4	.877
Likelihood Ratio	1.455	4	.835
Linear-by-Linear Association	.047	1	.829
N of Valid Cases	100		

a. 5 cells (50.0%) have expected count less than 5. The minimum expected count is .30.

Education * Receiver

			Receiver		Total
			Accept	Refuse	
Education	0	Count	3	0	3
		% within Receiver	4.3%	0.0%	3.0%
	1	Count	15	5	20
		% within Receiver	21.4%	16.7%	20.0%
	2	Count	43	20	63
		% within Receiver	61.4%	66.7%	63.0%
	3	Count	9	5	14
		% within Receiver	12.9%	16.7%	14.0%
Total		Count	70	30	100
		% within Receiver	100.0%	100.0%	100.0%



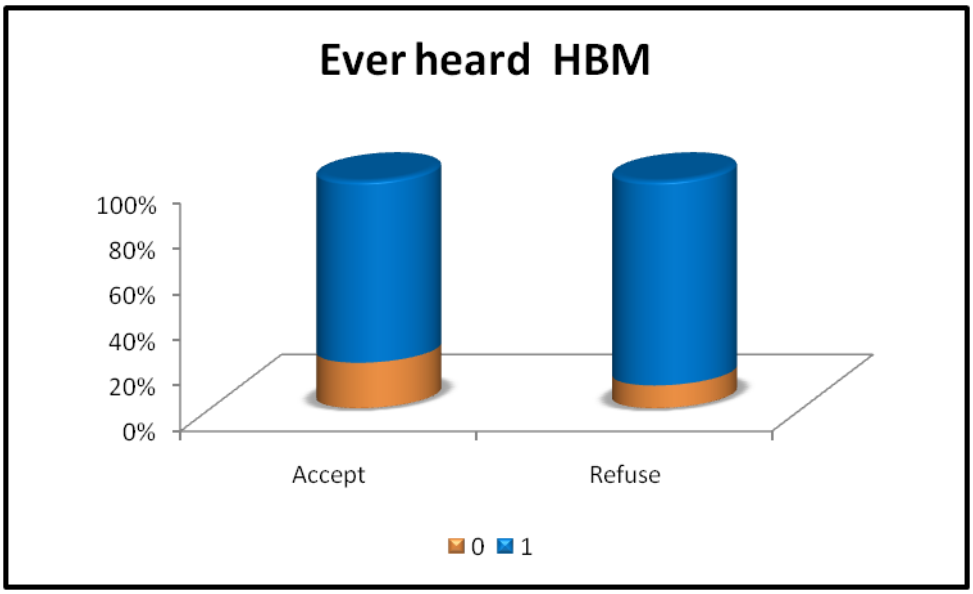
Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.833[a]	3	.608
Likelihood Ratio	2.688	3	.442
Linear-by-Linear Association	1.371	1	.242
N of Valid Cases	100		

a. 3 cells (37.5%) have expected count less than 5. The minimum expected count is .90.

Ever heard HBM * Receiver

			Receiver		Total
			Accept	Refuse	
Ever heard HBM	0	Count	14	3	17
		% within Receiver	20.0%	10.0%	17.0%
	1	Count	56	27	83
		% within Receiver	80.0%	90.0%	83.0%
Total		Count	70	30	100
		% within Receiver	100.0%	100.0%	100.0%

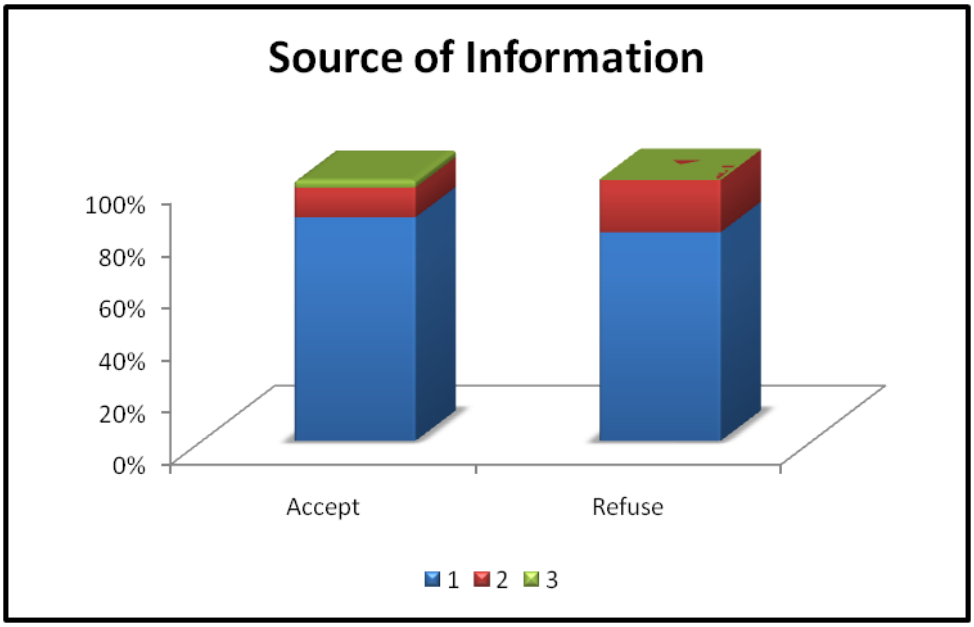


Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.488[a]	1	.222		
Continuity Correction[b]	.864	1	.353		
Likelihood Ratio	1.616	1	.204		
Fisher's Exact Test				.262	.178
Linear-by-Linear Association	1.473	1	.225		
N of Valid Cases	100				

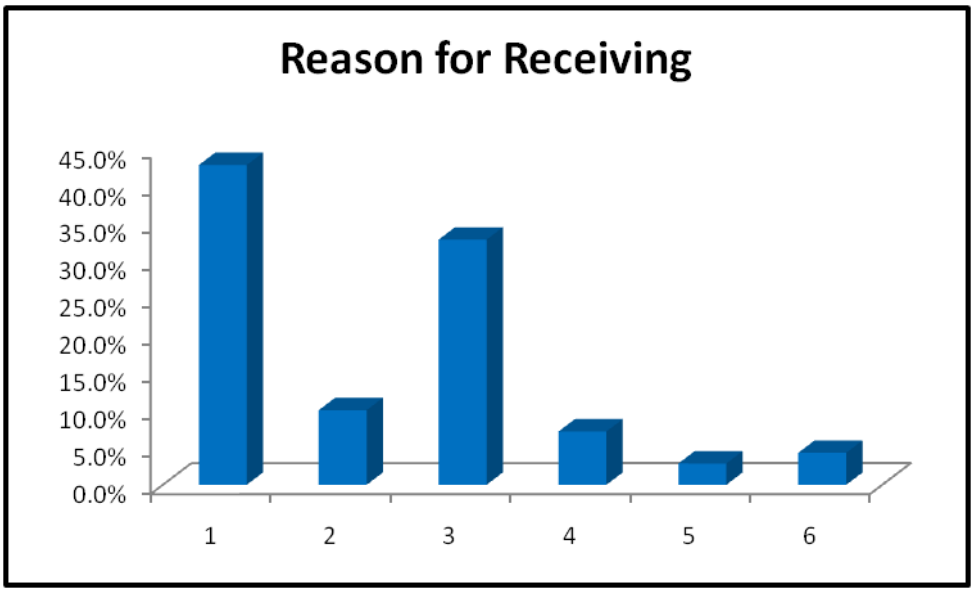
Source of Information * Receiver

			Receiver		Total
			Accept	Refuse	
Source of Information	1	Count	60	24	84
		% within Receiver	85.7%	80.0%	84.0%
	2	Count	8	6	14
		% within Receiver	11.4%	20.0%	14.0%
	3	Count	2	0	2
		% within Receiver	2.9%	0.0%	2.0%
Total		Count	70	30	100
		% within Receiver	100.0%	100.0%	100.0%



Reason for Receiving (Q) * Receiver

			Receiver	
			Accept	Total
Reason for Receiving (Q)	1	Count	30	30
		% within Receiver	42.9%	42.9%
	2	Count	7	7
		% within Receiver	10.0%	10.0%
	3	Count	23	23
		% within Receiver	32.9%	32.9%
	4	Count	5	5
		% within Receiver	7.1%	7.1%
	5	Count	2	2
		% within Receiver	2.9%	2.9%
	6	Count	3	3
		% within Receiver	4.3%	4.3%
Total		Count	70	70
		% within Receiver	100.0%	100.0%



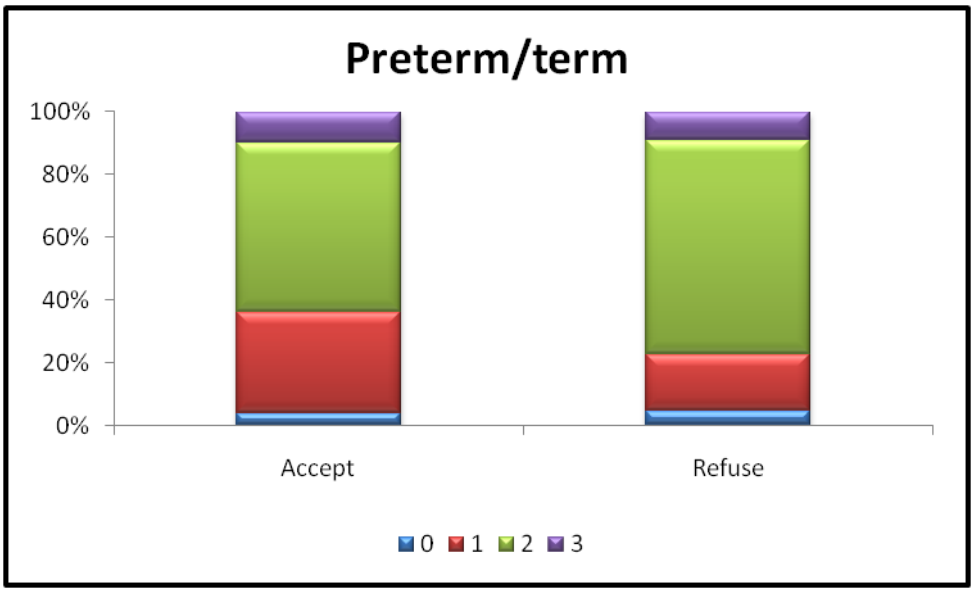
Chi-Square Tests

	Value
Pearson Chi-Square	.[a]
N of Valid Cases	21

a. No statistics are computed because Receiver is a constant.

Preterm/term * Receiver

			Receiver		Total
			Accept	Refuse	
Preterm/term	0	Count	2	1	3
		% within Receiver	4.0%	4.5%	4.2%
	1	Count	16	4	20
		% within Receiver	32.0%	18.2%	27.8%
	2	Count	27	15	42
		% within Receiver	54.0%	68.2%	58.3%
	3	Count	5	2	7
		% within Receiver	10.0%	9.1%	9.7%
Total		Count	50	22	72
		% within Receiver	100.0%	100.0%	100.0%



Chi-Square Tests

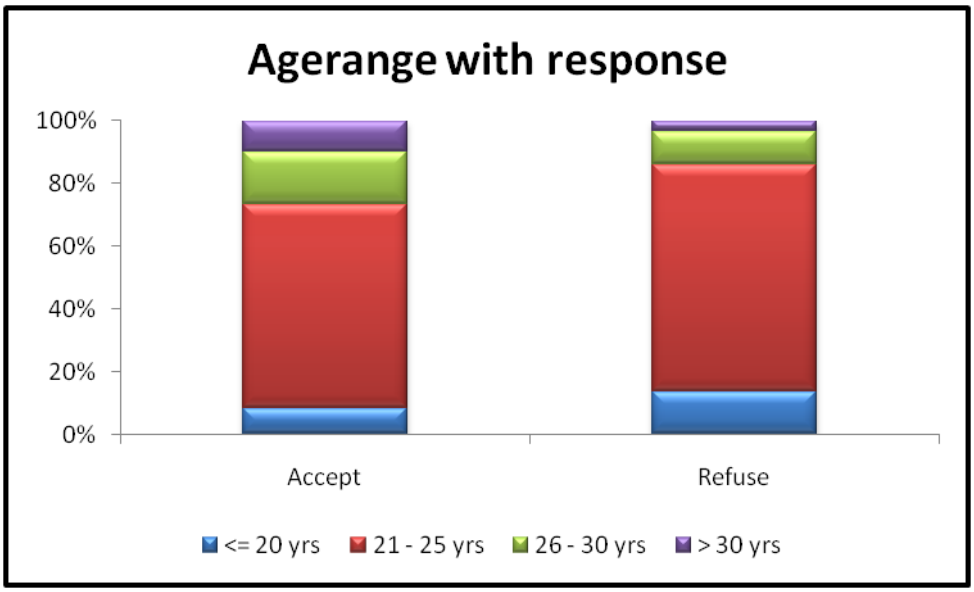
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.601[a]	3	.659
Likelihood Ratio	1.673	3	.643
Linear-by-Linear Association	.446	1	.504
N of Valid Cases	72		

a. 4 cells (50.0%) have expected count less than 5. The minimum expected count is .92.

Age range Receiver

Crosstab

			Receiver		Total
			Accept	Refuse	
Agerange	<= 20 yrs	Count	6	4	10
		% within Receiver	8.5%	13.8%	10.0%
	21 - 25 yrs	Count	46	21	67
		% within Receiver	64.8%	72.4%	67.0%
	26 - 30 yrs	Count	12	3	15
		% within Receiver	16.9%	10.3%	15.0%
	> 30 yrs	Count	7	1	8
		% within Receiver	9.9%	3.4%	8.0%
Total		Count	71	29	100
		% within Receiver	100.0%	100.0%	100.0%

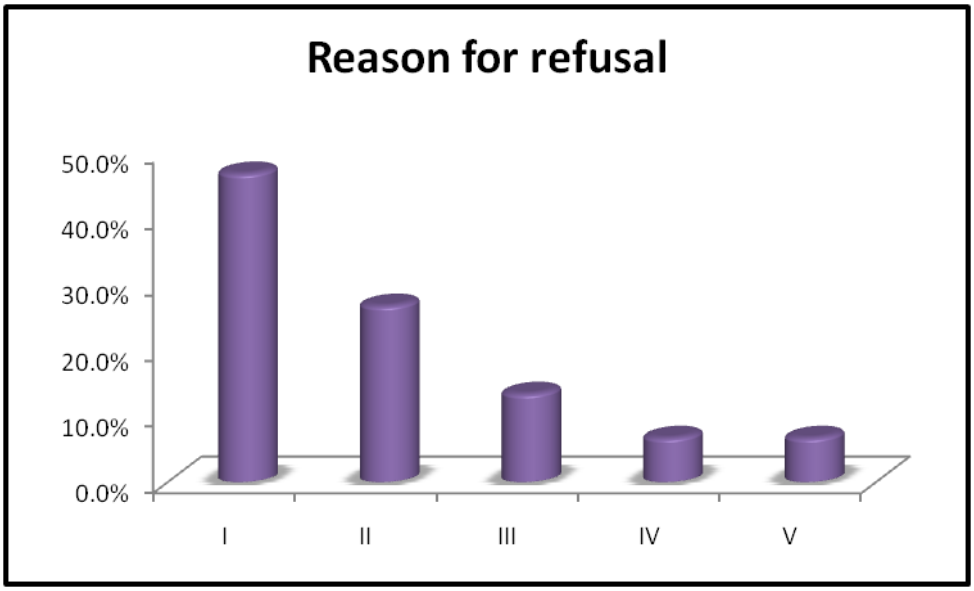


Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.414[a]	3	.491
Likelihood Ratio	2.606	3	.456
Linear-by-Linear Association	2.369	1	.124
N of Valid Cases	100		

a. 3 cells (37.5%) have expected count less than 5. The minimum expected count is 2.32.

	Reason for refusal
I	46.7%
II	26.7%
III	13.3%
IV	6.7%
V	6.7%

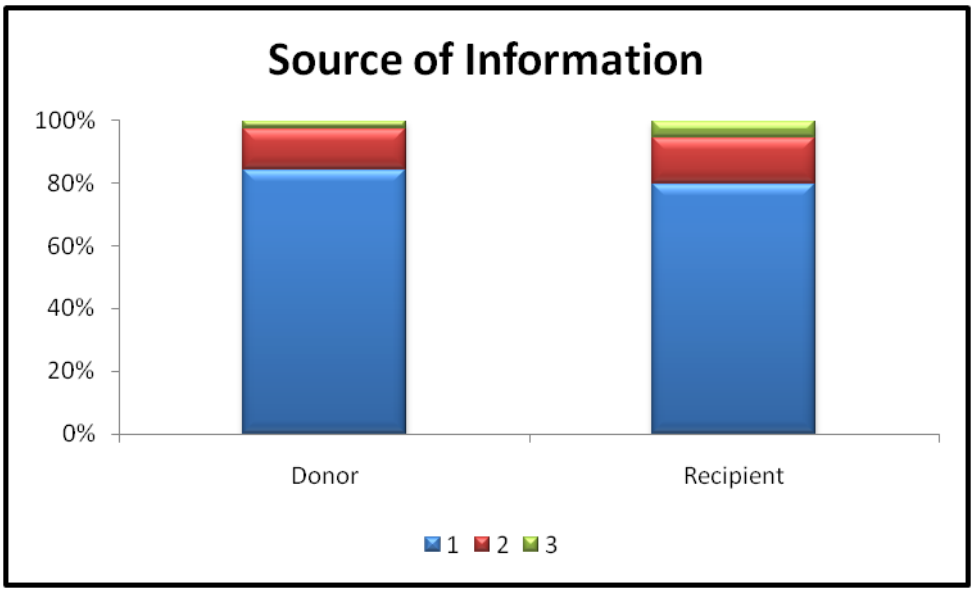


OVERALL

Source of Information * Donor

Crosstab

			Donor		Total
			Accept	Refuse	
Source of Information	1	Count	123	43	166
		% within Donor	84.2%	79.6%	83.0%
	2	Count	19	8	27
		% within Donor	13.0%	14.8%	13.5%
	3	Count	4	3	7
		% within Donor	2.7%	5.6%	3.5%
Total		Count	146	54	200
		% within Donor	100.0%	100.0%	100.0%



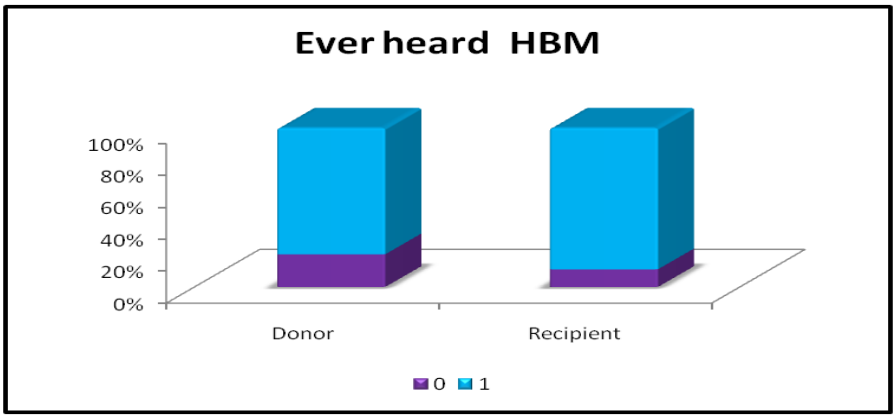
Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.089[a]	2	.580
Likelihood Ratio	1.008	2	.604
Linear-by-Linear Association	.930	1	.335
N of Valid Cases	200		

a. 1 cells (16.7%) have expected count less than 5. The minimum expected count is 1.89.

Ever heard HBM * Donor

			Donor		Total
			Accept	Refuse	
Ever heard HBM	0	Count	30	6	36
		% within Donor	20.5%	11.1%	18.0%
	1	Count	116	48	164
		% within Donor	79.5%	88.9%	82.0%
Total		Count	146	54	200
		% within Donor	100.0%	100.0%	100.0%



Chi-Square Tests

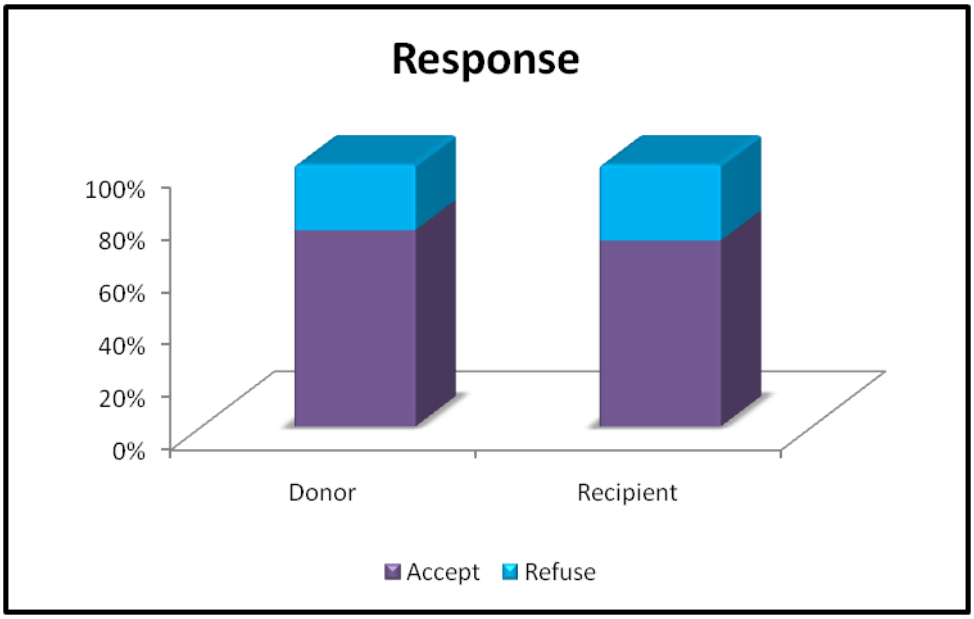
	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	2.378[a]	1	.123		
Continuity Correction[b]	1.782	1	.182		
Likelihood Ratio	2.575	1	.109		
Fisher's Exact Test				.149	.088
Linear-by-Linear Association	2.366	1	.124		
N of Valid Cases	200				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 9.72.

b. Computed only for a 2x2 table

Donating * Groups

			Groups		Total
			Donor	Recipient	
Donor	Accept	Count	75	71	146
		% within Groups	75.0%	71.0%	73.0%
	Refuse	Count	25	29	54
		% within Groups	25.0%	29.0%	27.0%
Total		Count	100	100	200
		% within Groups	100.0 %	100.0%	100.0 %



Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.406[a]	1	.524		
Continuity Correction[b]	.228	1	.633		
Likelihood Ratio	.406	1	.524		
Fisher's Exact Test				.633	.317
Linear-by-Linear Association	.404	1	.525		
N of Valid Cases	200				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 27.00.

b. Computed only for a 2x2 table

The collected data were analysed with IBM. SPSS statistics software 23.0 Version. To describe about the data descriptive statistics frequency analysis, percentage analysis were used for categorical variables and the mean and & S.D. were used for continuous variables. To find the significance in categorical data Chi-Square test was used. In the aboe statistical tools the probability value .05 is considered as significant level.

P-Value	# No Significant at P>.05

P-Value	** Highly Significant at P≤ .01

RESULTS

A total of 200 mothers were interviewed. Their mean age was 23.6 ± 3.7 years with 33.5% having some form of primary education and 54.5% having secondary education. Only 82% of them had heard of breast milk banking; source of information being mainly from health workers (83%) and from friends (3.5%). Other sources of information included the print and electronic media (13.5%). Majority 30% of the mothers would not give their babies human milk donated by another nursing mother largely because of fear of transmission of infections/diseases (46.7%) Inadequate milk 24%, against traditions and customs 8%, Family not co-operative 8%, spread of infection 20%, While 70% of mothers were willing to donate breast milk for other babies' uses, However, most strongly agreed that human milk banking would help assist working mothers, sick mothers, orphans and abandoned babies.

Among the mothers who gave definite responses to willingness for the use of donated human milk among the donor mother 40.8%, donated for my baby in nicu. 19.7% of mother donated the excessive milk production beyond their need. 6.6% donated for avoid wastage. 19.7% of mother donated for they are know whetehr breast milk better than infant formula. 6.6% of mother aware of benefits to mother though breast milk donation. 1.3% of mother donated for lactacting mother with dead

children. 1.3% of mother support the promotion of health of children. Remaining 1.3% of mother doanted for satisfaction that I can help a baby in need.

Among the reasons for receiving donated breast milk, 42.9% of babies received for insufficient milk production, 32.9% received as advised by the health workers, 10% received as they thought breast milk is the best source of food for baby when compared to others, 7.1% of persons considered due to considering the health risk of the infant (eg: cleft lip, cleft palate),4.3% babies received due to the poor health condition of the mother and 2.9% given to orphan and abandoned babies.

Among the reasons for deferring the breast milk donation, 40% of mothers feared of not having enough milk for their own babies, 24% due to inadequate milk production, 20% due to in-co-operative family members and 8% due to fear of spread of infection while expressing breast milk.

DISCUSSION

The use of donor human milk is generally accepted in many developing countries. Some mothers would not give their babies human milk donated by another nursing mother. The major reason observed for this decision is the fear of transfer of diseases. To overcome this the human donor milk must be made safe and secure. The finding that tradition was not a major reason for unwillingness of mothers to use donated human milk could possibly be explained by the fact that wet nursing is not new to most traditions in India and it is accepted by the major religions. The marketing and availability of breast milk substitutes provides a ready alternative for feeding the infant in situations that hitherto qualified for wet nursing. Breastfeeding mothers supported donation of their excessive breast milk to a human milk bank, provided it would be easy and not overly time consuming; and mothers of preterm or sick infants would use a human milk bank if they were assured the milk was safe and appropriate for their babies. Few mothers are not willing for donating their breast milk to the milk bank. The fear for donating their breast milk is that it could shorten the ration for their own babies.

Thus awareness needs to be increased on the physiology of breast milk production. Mothers had 2 types of instinct, fear of infecting their babies with disease discourages their willingness to

use donor milk, while the satisfaction that they can help another baby makes them willing to donate their milk. It is more than reasonable to expect that some prior knowledge or experience with an intervention would be a necessary prerequisite for accepting it. The importance of having familiarity and ideally experience with breast milk donation was clearly illustrated in the study of Iyoha A BI et al by the fact that those participants who had been exposed to the practice were generally more convinced of its value and efficacy.

Human donor milk fulfills an important role in keeping babies healthy and thriving. It is life-saving and is the optimal choice for preterm and sick infants when the mother's own milk is not available. Mothers who know the importance of breast milk but are having difficulty breastfeeding them are relieved when they are provided donor milk.. This helps them to nourish their infants and continue their efforts in getting their breast milk supply to successfully feed their babies.Children whose mothers died in childbirth or shortly thereafter as well as adopted children also stand to benefit.

Mothers need to be educated on the importance of having a breast milk bank as seen in developed countries. The cultural myth in our society that negates the use of another nursing mother’s milk for a baby requires correction. It is important to note that in some parts of the

country, wet nursing is carried out especially by relatives or close neighbours may be called upon to help suckle a child in the event that the baby's mother is not available (for instance in case of maternal mortality). Some mothers give their milk directly to the parents of babies in need of breast milk. This is known as casual sharing. Its a caring act of sisterhood. It is necessary to ensure that the milk tested in a laboratory and confirmed that is safe for the baby.

A sizable proportion(18%) of mothers interviewed were unaware of milk banking. Milk banking is a form of tissue banking just like blood banking. Its awareness among mothers would likely increase its acceptance as has occurred with blood banking services. Generally, blood banking services are acceptable among people and is believed to be life-saving. Many mothers accept blood transfusion than human donor milk for infants. This may not be unconnected with the lack of awareness as it concerns human donor milk. Perhaps a comparison of the level of acceptance between both tissue usages among mothers may be worth evaluating in the future. Coutsoudis et.al demonstrated in their study that mothers were more comfortable with blood transfusion than with the use of donor milk. The participants in their study claimed that blood transfusion is generally a short-term intervention that may be completed within a few hours, where as the use of donor milk is more sustained over

days or months and they would need to ponder over the use of this intervention. This suggests a certain degree of sensitivity with breast milk that is perhaps absent with blood. The study of Coutsoudis et.al also showed that the obstacles to the acceptability of donor milk were mainly stemming from lack of awareness/familiarity with the processes around donor breast milk and that these could be readily addressed through health education; and the more psychological concerns would also likely be reduced over time as these educational efforts progress.

CONCLUSION

From our study, majority of the donor mothers and recipients have heard about milk banking and they have supported milk banking and stated that they would donate their milk if a milk bank was opened throughout the day.

The approch of the media and health worker in introduction of milk banking will help to eliminate these obstacles. They help in spreading knowledge about the importance of breast milk bank and its use in needed babies.

Mothers with increased age and parity need more awareness and knowledge about milk banking.

In our set up, we have 24/7functioning breast milk bank which helps in better feeding of the sick, preterm and needed neonates like orphan and cradle babies, babies of lost mother.

It is high time that we have to start donor milk banks in all the districts to protect the needy ones. Milk banking should be applied as an extension of national breast feeding policy.

Child health policy may need to include donor human milk banking in it, so that it can be done safety and consistently and is accessible to infants and children who are in need of breast milk.

Donor human milk banking will make a child friendly world. Let's make an initiative.

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BREAST MILK DONATION : ACCEPTANCE AND AWARNESS OF DONORS AND RECIPIENTS

PROFORMA

DONOR NO :

1. NAME :

2. AGE :

3. IP NO. :

4. LITRACY OF MOTHER : (illiterate/1*/ 2*/ 3*)

5. PARITY :

AWARNESS OF HUMAN MILK BANK IN GMKMCH

1. Had heard of breast milk bank 1 / 0

S.No	SOURCE OF INFORMATION	1	0
1	Health institution		
2	Mass media		
3	Friends and relatives		

DONOR QUESTIONS

S.NO	REASONS FOR DONATION	1	0
1	For my baby in nicu		
2	Excessive milk production beyond need		
3	Avoid wastage		
4	Donation through health worker motivation		
5	Know whether breast milk is better than infant formula		
6	Aware of benefits to mother though breast milk donation		
7	Lactating mother with dead children		
8	Do support the promotion of health of children		
9	Satisfaction that I can help a baby in need		
10	Do support promotion of health of children		
11	A good idea.		
12	In regard to access to information about the importance of donating milk.		
13	Help mothers who are incapable of breast feeding.		
14	Donate milk for the benefit of premature children.		
15	Emotional influences of important persons.		

REASON FOR REFUSAL OF DONAR

S.NO	REASON FOR REFUSAL	1	0
1	Fear of not having enough milk for own baby		
2	Against traditions and customs		
3	Inadequate milk		
4	Family not co-operative		
5	Spread of infections		
6	Has mastitis or other infections		
7	Not interested		
8	Self esteem		
9	No time		
10	Unknown reason		

BREAST MILK DONATION : ACCEPTANCE AND AWARNESS OF DONORS AND RECIPIENTS

PROFORMA

RECEIPIENT NO :

1. NAME :

2. AGE :

3. IP NO. :

4. TERM / PRETERM :

5. LITRACY OF MOTHER : (illiterate/1*/ 2*/ 3*)

6. PARITY :

AWARNESS OF HUMAN MILK BANK IN GMKMCH

1. Had heard of breast milk bank 1 / 0

S.No	SOURCE OF INFORMATION	1	0
1	Health institution		
2	Mass media		
3	Friends and relatives		

REASON FOR RECEIVING *Q*

S.NO	REASON FOR RECEIVING	1	0
1	Insufficient milk production		
2	Breast milk is the best source of food for baby		
3	Advised by health worker		
4	Infant health risk		
5	Sick mother unable to feed		
6	Unable to afford formula milk		
7	Milk formula allergies		
8	Adoption mother / Biological mother		
9	For my Twin babies		
10	Babies with dead mother		
11	Know whether breast milk is better than infant formula		
12	Will u accept only your relatives breast milk		
13	Are you receiving milk as you don’t have any option		
14	Does your community prohibit you from receiving		
15	Are you accepting because of motivation		

REASON FOR REFUSAL *R*

S.NO	REASON FOR REFUSAL	1	0
1	Fear of transmission of infections		
2	Fear of not having enough milk for own baby		
3	Against traditions and customs		
4	Family not co-operative		
5	Milk bank not accessible		
6	Do not like the idea		
7	Lack of knowledge		
8	Lack of hygiene		
9	Spouse and family may not like it		
10	Self esteem		

அரசு மோகன் குமாரமங்கலம்
மருத்துவக்கல்லூரி மருத்துவமனை
பச்சிளம் குழந்தைகள் பிரிவு, சேலம் – 1

தாய்ப்பால் வங்கி பயனாளியின் ஒப்புதல்

எனக்கு – எகளுக்கு தாய்ப்பாலை கொடையாக கொடுப்பதன் விபரங்களும். தாய்ப்பால் சேமிப்பின் விபரங்களும். தாய்ப்பால் பதப்படுத்தப்படும் முறைகள் மற்றும் அதன் நன்மைகள் பற்றிய விபர ்களும் தெரிவிக்கப்பட்டன. மேலும். தாய்ப்பால் வங்கியிலிருந்து பெறப்படும் பாலினால். குழந்தையின் உடல் மற்றும் மூளை வளர்ச்சியில் ஏற்படும் நன்மைகள். சில பக்க விளைவுகள் பற்றிய விபரங்களையும் தெரிந்து கொண்டேன்.

தாய்ப்பால் வங்கியிலிருந்து பெறப்படும் தாய்ப்பால் தரமானதாகவும். பாதுகாப்பானதாகவும். நோய்க்கிருமி தாக்குதல் இல்லாமலும் இருப்பதற்கு உண்டான தடுப்பு முறைகள் அனைத்தும் மேற்கொள்ளப்பட்டுள்ளது என்பதையும் தெரிந்து கொண்டேன். ஆயினும் இந்த தாய்ப்பாலின் மூலம் மிகச்சில நோய்கிருமிகள் பெறுநருக்கு (பயனாளிக்கு) பரவ வாய்ப்புள்ளது என அறிவேன்.

மேற்கண்ட விபரங்கள் அனைத்தும் அறிந்துகொண்டு எனக்கு ஏற்பட்ட சந்தேகங்களை நிவர்த்தி செய்து பின்பு தாய்ப்பால் வங்கியில் இருந்துஅளிக்கப்படும் பதப்படுத்தப்பட்ட தாய்ப்பாலை நான் பெற்றுக்கொள்ள சம்மதிக்கிறேன்.

தாய்ப்பால் வங்கியில் பாலின் இருப்பு நிச்சயம் இல்லாதகையால் தாய்ப்பால் தேவைப்படும் போதெல்லாம் கிடைக்கும் என்பது சாத்தியமில்லை என்பதையும் தெரிந்து கொண்டேன்.

மேற்கண்ட விபரங்கள் அனைத்தும் நான் அறிந்த மொழியில் எனக்கு சொல்லப்பட்டன. என் சந்தேகங்கள் முழுமையாக நிவர்த்தி செய்து கொண்டு எவ்வித கட்டாயமும் இன்றி இந்தப்படிவத்தில் கையெழுத்திடுகிறேன்.

கையொப்பம்

பெறுநர் (பயனாளி) ன் பெயர்		
உறவினர் ஒருவரின் பெயர்		
உறவுமுறை		
சாட்சி		

அரசு மோகன் குமாரமங்கலம்
மருத்துவக்கல்லூரி மருத்துவமனை
பச்சிளம் குழந்தைகள் பிரிவு. சேலம் – 1

தாய்ப்பால் வங்கி பயனாளியின் ஒப்புதல்;

எனக்கு – எகளுக்கு தாய்ப்பாலை கொடையாக கொடுப்பதன் விபரங்களும் தெரிவிக்கப்பட்டன. பச்சிளங்குழந்தைகளுக்கு, உடல் மற்றும் மூளை வளர்ச்சியில் தாய்ப்பால் ஏற்படுத்தும் நன்மைகளைப் பற்றி நான் தெரிந்துகொண்டேன், நான் கொடையளித்த தாய்ப்பாலினைப் பதப்படுத்தும் முறைகள் மற்றும் அதன் நன்மைகள் பற்றியும் அறிந்து கொண்டேன், நான் கொடையாக அளித்த தாய்ப்பாலை மீண்டும் திரும்ப பெற இயலாது என்பதையும். நான் அளித்த தாய்ப்பால் தேவையுள்ள குழந்தைகளுக்கு மத, இன, வர்த்தக, சார்பு இல்லாமலும் மற்றும் மருத்துவம் அல்லாத பிற காரணங்கள் சார்பில்லாமலும் அளிக்கப்படும் என்பதையும் அறிவேன்.

நான் அறிந்த வரையில், தாய்ப்பால் மூலம் பரவும் எந்த நோய்களும் எனக்கு இல்லை என்பதைத் தெரிந்துகொள்கிறேன்.

தாய்ப்பால் கொடைக்குத் தேவையான மருத்துவப் பரிசோதனைகளுக்கு என்னை உட்படுத்துவதற்கும். சோதனை முடிவுகளை தாய்ப்பால் வங்கிக்கு தெரியப்படுத்தவும் சம்மதிக்கிறேன்.

மேற்கண்ட விபரங்கள் அனைத்தும் நான் அறித் மொழியில் எனக்கு சொல்லப்பட்டன. என் சந்தேகங்களை முழுமையாக நிவர்த்தி செய்து கொண்டு எவ்வித கட்டாயமும் இன்றி இந்தப்படிவத்தில் நான் கையெழுத்திடுகிறேன்.

		கையொப்பம்
பெறுநர் (பயனாளி) ?ன் பெயர்		
உறவினர் ஒருவரின் பெயர்		
உறவுமுறை		
சாட்சி		

DONOR MASTER CHART

S.No	Name of Donor	Age	Parity	Education	Ever heard HBM	Source of Information	Reason for Donation	Reason for Refusal
1	Malathi	20	1	1	0	1	1	
2	Revathi	20	1	1	1	1	2	
3	Suganya	26	2	2	1	1	3	
4	Subashini	28	3	2	0	1	1	
5	Chandra	34	4	0	0	1	2	
6	Thilaga	22	1	2	1	1	4	
7	Kamala	21	1	1	1	1	1	
8	Jayanthi	22	1	1	1	1	4	
9	Brindha	34	5	2	1	1	2	
10	Abhinaya	17	1	2	1	1	2	
11	Jayamani	23	1	2	1	1	4	
12	Vijayalaxmi	27	2	1	1	2	1	
13	Akila	21	1	1	1	2	1	
14	Suganthi	29	2	2	1	1	4	
15	Muthuselvi	22	1	1	0	1	1	
16	Nithya	21	1	2	1	1	4	
17	Vanaja	20	1	1	1	1	2	
18	Pushpa	23	1	1	1	1	1	
19	Rajeshwari	24	1	1	1	3		1
20	Divya	23	1	2	0	1	5	
21	Kayalvizhi	21	1	2	1	1	1	
22	Karpagam	21	1	2	1	1		1
23	Nagalaxmi	20	1	1	1	2	1	
24	Annakili	28	3	2	1	2		2
25	Pooja	23	2	2	1	2	2	
26	Noorjagan	24	2	2	0	1	1	

27	Gomathi	21	1	2	1	1	5	
28	Saranya	24	2	2	1	1	4	
29	Rukkupriya	24	1	2	1	1	2	
30	Sakunthala	23	2	2	1	1	6	
31	Thenmozhi	20	1	2	0	3	1	
32	Banupriya	24	2	1	1	1	3	
33	Prema	23	1	1	1	1		4
34	Bhuvaneshwari	24	1	1	1	1	1	
35	Sangeetha	30	3	1	1	1		2
36	Amutha	30	3	1	1	1	1	
37	Divya	18	1	1	1	2		5
38	Sasikala	21	1	1	1	1	4	
39	Vennila	19	1	1	1	1	1	
40	Aathayee	27	2	1	0	1	2	
41	Nandhini	19	1	2	1	1	1	
42	Radha	22	1	1	1	3		3
43	Selvi	26	1	1	1	2	1	
44	Jayapriya	20	1	2	1	1		3
45	Seetha	21	1	2	1	1	2	
46	Thangamani	21	1	2	1	1	5	
47	Kasthuri	21	1	1	0	1	4	
48	Parimala	27	2	1	1	1	1	
49	Rubini	25	1	3	1	1	6	
50	Mumtaj begam	25	1	1	1	2	2	
51	Keerthiga	23	1	1	1	3		5
52	Bindu	23	1	1	1	1	2	
53	Priyadharshini	19	1	1	1	1	1	
54	Rekha	20	2	1	0	1	3	
55	Divya	19	1	1	1	1		1
56	Renuka	26	1	1	1	1	1	
57	Ramya	25	1	1	1	1		4

58	Kanagavathi	21	1	2	0	1	4	
59	Gomathi	26	1	2	1	1	1	
60	Kalpana	19	1	2	1	1		1
61	Indrakumari	22	1	1	1	2	2	
62	Priya	23	2	1	1	1	5	
63	Ambika	24	2	1	0	1	1	
64	Shanmugapriya	22	1	1	1	1	7	
65	Ponmalar	21	2	2	1	1	4	
66	Anadhi	22	1	1	0	1	3	
67	Ponmani	20	1	2	1	1	1	
68	Parameshwari	33	4	0	1	2		1
69	Kokila	26	2	2	1	1	1	
70	Srimathi	25	2	2	1	1		5
71	Manimegalai	20	2	2	0	1	1	
72	Kalaivani	25	2	2	1	1		1
73	Umathevi	26	2		1	1	2	
74	Dheepa	22	1	2	1	1	1	
75	Murugavalli	27	2	2	1	1	4	
76	Narmatha	20	1	2	0	2	2	
77	Pushpavalli	23	2	2	1	1	1	
78	Kalaivaani	28	3	2	1	3	1	
79	Vinodhini	22	1	2	1	1		5
80	Kavitha	30	3	2	1	1	4	
81	Kanaga	27	2	1	1	1	3	
82	Eswari	24	1	1	1	1	5	
83	Vennila	19	1	1	1	1	1	
84	Chithra	24	1	3	0	1	1	
85	Palaniyammal	30	3	3	1	1	8	
86	Anjali	24	1	3	1	1	2	
87	Anushiya	22	2	1	1	1	1	
88	Maragatham	21	1	1	1	1	9	

89	Ranjana	24	2	2	0	1	4	
90	Karthiga	24	2	2	1	1		1
91	Ranjtha	29	3	2	1	1	1	
92	Surya	25	1	1	1	1	4	
93	Pavithra	25	2	2	0	2		1
94	Kumara	25	2	2	0	1		1
95	Chithradevi	30	3	2	1	1		3
96	Muneeshwari	34	3	0	0	1	4	3
97	Radha	19	1	1	1	1		5
98	Deepthi	21	1	1	1	2		3
99	Jayalaxmi	22	1	2	1	1		3
100	Poongodi	27	2	1	1	1		1

RECIPIENT MASTER CHART

S.No	Name of Recipient	Mother age	IP No	Mother education	Mother parity	Ever heard HBM Yes No	Source of Information	Reason for Receiving (Q)	Reason for Refusal
1	B/O gomathi	19	42518	2	2	1	1	1	
2	B/O jyothi	22	35124	3	1	1	1	2	
3	B/O Selvi	21	42866	0	3	1	1	1	
4	B/O sudha	22	34949	2	1	1	1	3	
5	B/O kanimozhi	20	34748	2	3	0	1	4	
6	B/O fathima	21	42300	1	1	1	1	1	
7	B/O saranya	24	46112	2	2	1	3	3	
8	B/O priya	24	44632	3	1	0	1	2	
9	B/O muthulaxmi	29	45192	2	3	1	1	1	
10	B/O anitha	27	45710	1	2	1	2	4	
11	B/O meena	17	45532	2	1	1	1	3	
12	B/O jayanthi	19	42530	2	2	1	1	1	
13	B/O vanitha	`21	45110	1	1	0	2	2	
14	B/O madhu	22	6061	2	3	1	1	3	
15	B/O bhavani	19	42898	0	1	1	1	1	
16	B/O parimala	23	42010	2	2	1	1	3	
17	B/O parvathi	30	41030	3	1	0	1	6	
18	B/O lalitha	25	43041	2	1	1	1	1	
19	B/O kavitha	23	4401	1	2	1	1	3	
20	B/O maheswari	23	44327	2	3	1	2		1
21	B/O kala	24	44330	2	1	1	1	1	
22	B/O mariyayee	21	44533	2	1	1	1	4	
23	B/O sandhya	21	42663	2	1	1	1	3	

24	B/O kavipriya	29	44234	1	1	1	1	1	
25	B/O kalpana	21	44318	2	3	1	1		1
26	B/Obegam	21	45049	2	1	1	1	1	
27	B/O vanaja	32	43584	3	5	1	1	3	
28	B/O kavitha	28	45350	2	1	1	1	1	
29	B/O divya	21	44460	2	1		1		1
30	B/O suganya	24	45264	2	1	1	1		2
31	B/O muthulaxmi	21	45192	1	2	1	1		1
32	B/O sridevi	21	5855	2	1	1	1		3
33	B/O prabha	24	14281	2	2	0	1	3	
34	B/O noorjahan	24	46616	3	1	1	2	1	
35	B/O vanaja	27	45759	1	1	1	1	2	
36	B/O karpagam	21	45040	2	1	1	1	1	
37	B/O rasathi	34	44081	2	3	1	1		2
38	B/O kokila	24	32268	2	1	0	1	3	
39	B/O sangeetha	27	41520	1	1	1	1	3	
40	B/O mounika	24	44980	0	3	1	2	1	
41	B/O kavipriya	28	44669	2	1	1	1		1
42	B/O saraswathi	25	46938	2	2	1	1	1	
43	B/O thenmozhi	24	47426	2	1	0	1	6	
44	B/O chithra	24	41312	3	3	1	3	3	
45	B/O thenralarasi	23	47475	1	1	1	1	1	
46	B/O tamilselvi	33	47845	2	4	1	1	4	
47	B/O aishwarya	19	46214	2	1	1	1	3	
48	B/O shanthi	19	48232	2	2	1	1	2	
49	B/O farheem	22	47956	3	2	1	2	1	
50	B/O radha	22	44862	1	1	0	1	5	
51	B/O sudha	21	44702	2	1	1	1		1
52	B/O bharathi	24	47412	2	2	1	1	3	
53	B/O sathya	24	47032	2	1	1	1		2

54	B/O karthiga	21	46025	2	1	1	1	1	
55	B/O maheswari	23	48444	3	1	1	1		3
56	B/O shyamala	25	48317	1	3	1	1	3	
57	B/O kalaivani	22	40543	2	1	1	1	3	
58	B/O sumathi	21	46529		1	1			2
59	B/O sathiyapriya	24	47478	2	2	1	1	1	
60	B/O chinnapaapa	25	48009	2	1	1	1	5	
61	B/O priyanka	31	48772	1	1	0	1	3	
62	B/O sasikala	23	48374	2	3	1	2	1	
63	B/O deepa	26	47232	2	1	1	1	4	
64	B/O rukku	27	47818	2	1	1	1	1	
65	B/O nirmala	21	48211	1	1	1	1	3	
66	B/O maheswari	21	48404	2	2	0	1	6	
67	B/O valarmathi	25	49047	3	3	1	1	1	
68	B/O selvi	21	49457	2	1	1	2		4
69	B/O aathaaye	25	48215	1	2	1	1	3	
70	B/O soundarya	21	48269	2	1	1	1	2	
71	B/O priyadharshini	29	50330	2	2	0	1		1
72	B/O jayapriya	34	49620	2	3	1	1	1	
73	B/O rathna	38	44370	3	5	1	2		3
74	B/O thavamani	31	49089	1	1	1	1		1
75	B/O sathya	21	50133	2	2	1	1	2	
76	B/O mohana	32	48507	2	1	1	1		4
77	B/O rukupriya	21	47818	2	2	0	1	1	
78	B/O roshini	21	50040	1	1	1	2		5
79	B/O priya	23	50342	2	3	1	1	3	
80	B/O sathya	19	44512	2	1	1	1		3
81	B/O devika	26	49024	2	2	1	1		1
82	B/O rubini	21	50094	1	1	1	1	1	
83	B/O veeramma	24	50803	2	1	1	1		2

84	B/O navajothi	26	64560	3	3	1	2		2
85	B/O sowmiya	21	52416	2	1	0	1	3	
86	B/O revathi	22	51729	2	2	1	1		2
87	B/O bhuvaneshwari	27	50883	2	2	1	1	3	
88	B/O thilagavathi	22	58031	1	1	1	1		1
89	B/O vaithegi	26	4910	3	2	1	1		1
90	B/O amsaleka	22	8212	2	1	1	1	1	
91	B/O kanniyammal	22	6579	1	1	1	2	3	
92	B/O pushpa	19	40093	2	2	0	1		2
93	B/O padma	23	8058	3	1	1	1	1	
94	B/O kantha	21	6879	1	2	1	2		1
95	B/O selvi	23	46144	2	1	1	1		5
96	B/O haseena baanu	22	58216	2	1	0	1	1	
97	B/O lavanya	23	53133	3	2	1	1		1
98	B/Olalitha	21	53833	2	1	1	2	1	
99	B/O malliga	19	38324	2	2	1	1		1
100	B/O manimegalai	21	8867	2	1	0	1	1	